The Massachusetts Environmental Results Program:

User's Guide for Government Agencies

January 2002

1. Introduction

What is the Purpose of this Guide?

This guide provides an introduction to the Massachusetts Environmental Results Program (ERP), a promising new regulatory system that is readily transferable to other states. The United States Environmental Protection Agency (EPA) has worked closely with the Massachusetts Department of Environmental Protection (MA DEP) to introduce ERP to other states because EPA recognizes ERP's significant benefits and considerable potential for

> "The EPA's Innovation Action Council, an intra-agency group of senior managers from program offices and the Regions charged with promoting environmental innovations across the Agency, identified the Environmental Results Program as one of the most promising efforts to come through Project XL and endorsed further exploration of other possible applications of its ideas."
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> *—June 29, 2000, letter from EPA Associate Administrator for Policy, Economics and Innovation to MA DEP Commissioner.*

broader application. EPA is encouraging other states to consider using the ERP approach, either through direct adoption of MA DEP's ERP standards and materials or through development of their own programs for sectors of concern in their states. To aid states in understanding and adopting ERP, EPA has worked with MA DEP to develop this User's Guide and has sponsored meetings across the country to discuss ERP with other states. The User's Guide, which describes the basic building blocks of ERP in Massachusetts, is intended to provide states with an in-depth understanding of the components and operations of the Massachusetts program so other states can determine whether ERP could be useful in addressing their own priorities.*

What is the Environmental Results Program?

ERP is an environmental management initiative to improve environmental performance in specific industry sectors. It replaces individual state permits with a self-certification procedure, shifting more responsibility for compliance to facilities while reducing regulatory burden. ERP also provides compliance assistance and it uses a carefully designed system of performance measurement to gauge results and track performance changes over time.

ERP's three major tools—self-certification, compliance assistance and performance measurement—complement each other to create an integrated, dynamic approach to compliance assurance. Together, these tools create a balance between helping facilities achieve compliance and holding them accountable for self identifying and correcting non-compliance. ERP is not a voluntary program; for those sectors covered by ERP, state regulations require participation (including self-certification of compliance). MA DEP also uses a unique inspection strategy as part of a comprehensive compliance assurance program by conducting both random inspections as well as targeted inspections that focus on its newly developed, sector-specific performance measures.

> **The Three Tools of ERP**
> 1. Self-certification of compliance (by companies).
> 2. Compliance assistance (by regulatory agencies and industry trade organizations).
> 3. Performance measurement to track results.

Now in its fifth year, ERP is an established compliance assurance program at MA DEP for three sectors: dry cleaners, printers, and photo processors. Through ERP, MA DEP has demonstrated the ability to achieve gains in six areas:

- **Identify universe of regulated facilities.** ERP is designed to identify the universe of regulated

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* This User's Guide is an extension of an Executive Summary of the Massachusetts Environmental Results Program prepared jointly by EPA and MA DEP, which is available at www.state.ma.us/dep/erp.

facilities in the targeted sectors (see box, above). This feature enables the state to be more effective in its role of assuring that all who should comply with requirements do so. For example, the percentage of dry cleaners on file in DEP's databases has increased from 10 percent to 98 percent of the estimated total number of dry cleaners.* The increase means that DEP is now aware of more regulated facilities and that more facilities are aware of their environmental responsibilities.

- **Program results.** The universe of facilities (photo processors and dry cleaners) covered by ERP was approximately 1,100. In the first year of ERP, more than 80 percent of covered facilities complied with ERP requirements by either certifying compliance or submitting Return to Compliance Plans. After five years of implementation, compliance with the self-certification requirement is approximately 98 percent.
- **Measurable environmental results.** ERP analyses reveal overall environmental performance improvements in all three business sectors as well as many examples of significant performance improvements for measures of individual environmental practices.
- **Cost-effectiveness.** Program maintenance costs for ERP are now less than 1 FTE per sector

which is significantly less than the costs that MA DEP would have incurred for operating a conventional case-by-case permit and compliance program for any of the three ERP sectors.

- **Public accountability** (for both business and government). The self-certification requirement holds facility owners accountable for certifying their environmental compliance, in a publicly available document. In addition, the ERP performance measures provide a straightforward means of making publicly available information about the performance of individual facilities and

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*   This 98 percent is based on the 2001 certifier return rate (for all three ERP sectors).

whole industrial sectors, as well as MA DEP's regulatory effectiveness.

- **Flexibility for businesses.** ERP uses a performance-based standard approach that allows facilities greater flexibility in choosing how they will meet the standards while still holding them accountable for environmental performance. For example, some prescriptive regulatory standards have been replaced by performance-based standards, such as specifying that facilities meet a 2 parts per million wastewater discharge standard rather than prescribing a specific control technology. Also, by eliminating the need for a permit, facilities can make changes in their operations without having to receive prior permit modification approval from MA DEP. Although the number of permits eliminated in the initial three sectors is relatively small, MA DEP is looking to expand the ERP approach to sectors with more permitting obligations. In September 2001, MA DEP implemented ERP for new boilers, replacing an entire "low value added" state permitting category with an ERP certification program.

Structure of this User's Guide

Following this introduction (Section 1), there are three additional sections to this User's Guide:

- **Section 2** provides a detailed description of how ERP works. The description includes information on the specific tools, techniques, and documents developed by MA DEP, as well as how those components link to, and support, each other. In addition, Section 2 includes a discussion of how MA DEP manages ERP, including staffing structure, the regulatory framework, information management, and resource allocation.
- **Section 3** includes a discussion of the ERP results.
- **Section 4** provides guidance on deciding if ERP is a useful approach for your state, and on taking the first steps toward development and implementation of such a program.
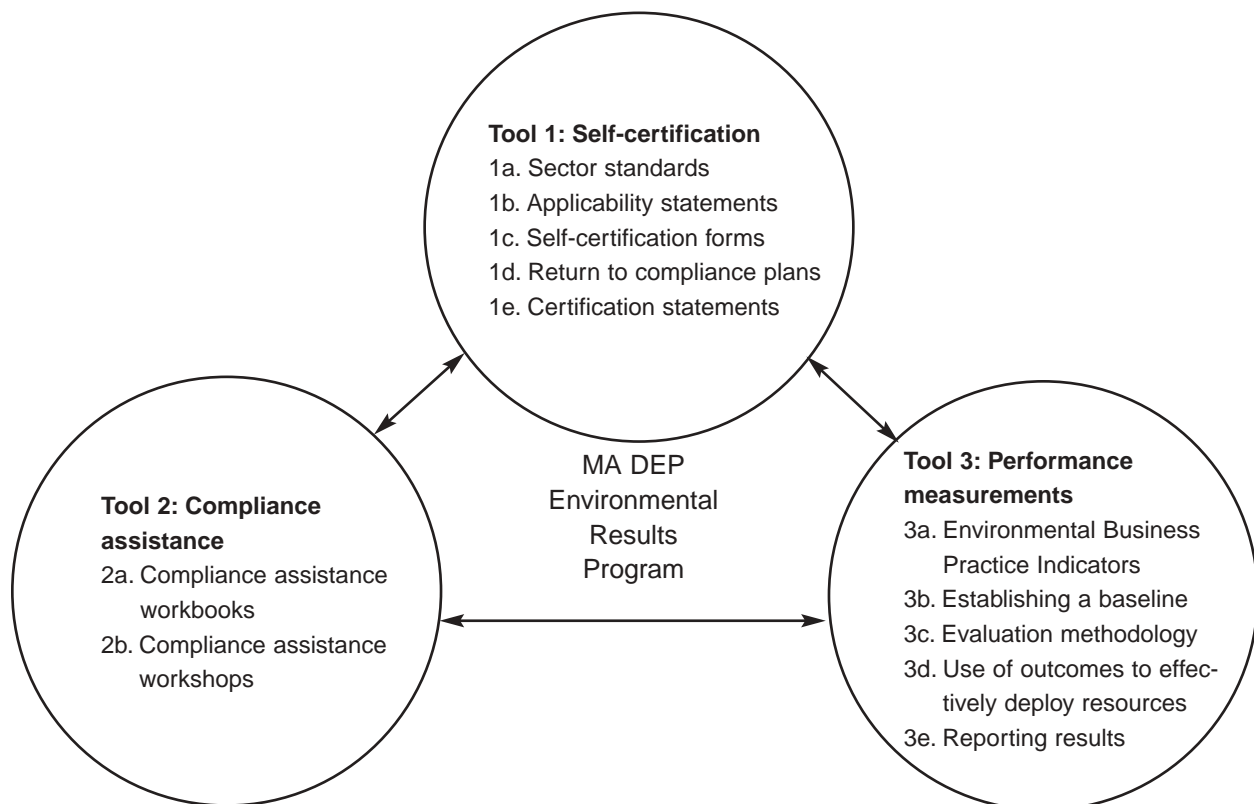
2. How ERP Works

The Three Basic Tools of ERP

ERP is designed to build on MA DEP's existing compliance assurance program. The overarching goal of ERP has been to create a sustainable regulatory program that efficiently uses resources to reach a large number of facilities and allows adjustments to program implementation strategies based on real performance data. ERP's main technique for reaching that goal is to shift more of the burden of certifying compliance to facilities, which is intended to instill a new level of accountability in companies. In addition, ERP uses statistical methods to efficiently track overall environmental performance.

ERP complements existing compliance assurance practices with a set of innovative tools:

1. An annual **self-certification** of compliance by companies to increase self-evaluation and accountability.
2. **Compliance assistance** from the agency through outreach and specially-designed, plain-language workbooks.
3. A new **performance measurement approach** implemented through inspections at a random sample of facilities before and after ERP self-certification that allows MA DEP to track results, determine priorities, and strategically target future compliance inspections and assistance efforts.

Each of the three major ERP tools involves several individual components. The tools, as well as their individual components, are interrelated and intentionally designed to complement each other.

Figure 1: Major Tools of ERP*

Tool 1: Self-certification
1a. Sector standards
1b. Applicability statements
1c. Self-certification forms
1d. Return to compliance plans
1e. Certification statements

Tool 2: Compliance assistance
2a. Compliance assistance workbooks
2b. Compliance assistance workshops

MA DEP Environmental Results Program

Tool 3: Performance measurements
3a. Environmental Business Practice Indicators
3b. Establishing a baseline
3c. Evaluation methodology
3d. Use of outcomes to effectively deploy resources
3e. Reporting results

* ERP materials have their underlying basis in regulatory requirements. The three major tools of ERP have regulatory requirements as their foundation. For example, EBPIs are a subset of regulatory requirements plus some recommended "beyond compliance" practices.

Figure 2: The ERP Cycle

Prior to ERP, MA DEP conducts inspections at random set of facilities to establish baseline performance.

MA DEP provides technical assistance to all facilities in covered sector through workbooks and workshops.

Facility managers review MA DEP workbooks and determine compliance status.

ERP does not apply to the facility.

Facility manager completes applicability statement.

Facility is out of system.

Facility is in compliance.

Facility manager completes self-certification form.

Facility is out of compliance.

Facility manager completes Return to Compliance Plan and self-certification form.

MA DEP conducts targeted inspections as well as inspections at random sample of facilities to determine changes in performance and compliance status.

MA DEP evaluates sector and facility performance using results of self-certifications and inspections.

MA DEP revises compliance assistance, inspection protocols, and level of oversight accordingly.

Process repeats each year.

Each of the ERP tools and components plays a role as each facility makes its way through the ERP process. Different tools come into play for different scenarios—for example, if a facility is in compliance, it uses a workbook and certification statement, while an out-of-compliance facility must also complete a RTC plan. All of the facility outcomes then feed back in to MA DEP through Environmental Business Practice Indicators, statistical analysis, and review of certifications to allow for modification of the program, as necessary, from year to year. This allows MA DEP to adapt its program and apply its resources efficiently based on data regarding actual industry performance trends.

Tool 1: Self-Certification

ERP establishes accountability by setting multimedia performance standards that replace individual state permits at a facility and by requiring a self-certification statement. A senior company official must annually "self-certify" that his or her facility is in compliance with all applicable state air, water and hazardous waste management standards, and has systems in place to maintain compliance over the course of the upcoming year. This process raises high-ranking facility managers' and operators' awareness and prioritization of environmental performance by requiring them to personally certify their facility's compliance. The self-certification form also provides an easy way for facility management and staff to understand environmental obligations and gauge their own environmental performance.

This self-certification approach is supported by training, a plain-language workbook that includes a checklist of multimedia regulatory requirements, health and safety information, and pollution prevention advice.

The individual components of the self-certification process are:

1a. Sector performance standards.

ERP is multimedia in design. Through rulemaking, MA DEP required compliance certification standards for each industrial sector that were based on existing air, water, and hazardous waste state and federal requirements. Other recommended practices such as pollution prevention (P2) are explained in an industry sector workbook. The result was a workbook and, as necessary, regulatory changes for each ERP industrial sector that:

- Consolidated all existing single-medium regulatory requirements.
- Streamlined administrative requirements.
- Introduced some new, more stringent, environmental standards for the sector that previously had not been included in existing standards for that sector.
- Eliminated overlaps and conflicts between the pre-existing single-medium standards.

While MA DEP adopted the ERP standards, including some new standards, through rulemaking, this step may not be required for implementation in other states. MA DEP decided to revise and adopt new standards in order to address some known ineffi-ciencies and problem areas in the existing ones. Another state could choose to develop its ERP based solely on existing state standards.

1b. Applicability statements.

An initial step in the ERP self-certification process is to ascertain that all potentially covered facilities are, in fact, subject to the environmental requirements. For example, some dry cleaner storefronts do not actually house dry cleaning equipment but, rather, send items to a separate facility for cleaning. If a facility manager receives an ERP certification package (workbook and forms) but does not think ERP applies to the facility, he or she must submit an "applicability statement" indicating why the facility is not covered by ERP.

1c. Self-certification forms.

Self-certification forms are designed to foster a high level of personal responsibility by companies for compliance at their facilities. Facility owners or managers certify not only that they are in compliance at the time of the certification, but that they have systems in place to remain in compliance over the coming year. These forms are a critical component of the

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Examples of ERP Sector Standards

MA DEP chose to update some environmental standards when it adopted the regulations governing ERP. Examples of ways in which MA DEP updated its standards include:

- A statewide standard of 2 mg/l of silver for sewer discharges from printers and photo processors.
- Limits on the amount of VOC in solvent-based inks, coatings, and adhesives used in printing.
- Consolidated requirements for dry cleaners that adopt the most stringent thresholds and requirements from EPA's MACT/GACT and DEP's RACT* requirements.
- Proposed statewide environmental standards for industrial discharges in place of the requirement to obtain a DEP sewer-connection permit.

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* Maximum Achievable Control Technology (MACT)
  Generally Achievable Control Technology (GACT)
  Reasonably Achievable Control Technology (RACT)

program. The ERP self-certification forms and statement work in tandem with the compliance assistance workbooks (see Tool 2: Compliance Assistance). The certification statement requires the signatory to confirm that they have read, understood, and complied with the requirements in the workbook. This connection ensures that facility managers understand their requirements and to what they are certifying.

1d. Return to compliance plans.
If a facility is not in compliance with regulatory standards at the time of self-certification, a facility official must complete a Return-to-Compliance (RTC) plan indicating how and when the facility will come back into compliance. This RTC plan is submitted along with a certification statement indicating the compliance status for all applicable certification questions. MA DEP reviews all RTC plans and follows up on each one; e.g., by inspecting the facility or by telephone, as appropriate, to ensure that the facility officials follow through with the actions described in the plan. Facilities that submit RTC plans may be subject to enforcement action but, except for egregious violations, MA DEP does not generally take enforcement action against facilities that self-identify and agree to correct violations in an appropriate and timely manner.

1e. Certification statements.
While self-certification workbooks and forms provide the information needed to certify compliance, the certification statement is the legal mechanism ensuring accurate and truthful compliance reports. In the certification statement, the highest-ranking official at the facility (generally the facility owner or manager) indicates the facility's compliance status with all the requirements described in the self-certification workbook and certifies that the facility has systems in place to maintain compliance. The responsible facility official signs the certification statement with notice that false, inaccurate, or misleading statements constitute regulatory violations, which are subject to penalties. Through this mechanism, the legal obligation for accurate certification (and thus for compliance) is placed firmly on the certifying individual. MA DEP targets facilities that fail to submit a certification with inspections and enforcement, as appropriate. Likewise, MA DEP also targets facilities whose self-certifications show inconsistencies either within an individual certification form or from one year to the next, or patterns of non-compliance by multiple facilities under common ownership or control. Facilities that have submitted false information on their self-certification forms or avoided the self-certification requirement also may receive penalties for violations. All of these consequences serve as incentives for facilities to participate fully and honestly in the self-certification process (see examples of enforcement in the upcoming section titled "Compliance Assurance and Enforcement under ERP").

Tool 2: Compliance Assistance
MA DEP supports the self-certification process by providing compliance assistance for all ERP facilities. MA DEP designed and implemented its compliance efforts in close collaboration with organizations and associations representing, and having interest in, the covered sectors. MA DEP's compliance assistance efforts include workbooks and workshops for each sector that clearly explain all of a facility's applicable environmental obligations. ERP sector workbooks and workshops feature regulatory compliance requirements (such as labeling of hazardous waste containers) and sound environmental practices that are "beyond compliance" (such as signs over sinks reminding employees not to dump chemicals down the drain). They also include information about the environmental, worker, and public health impacts of a facility's operations. The components of the compliance assistance strategy are:

2a. Compliance assistance workbooks.
Although compliance assistance workbooks are a fairly common compliance assurance tool, what makes the ERP workbooks unique is that they are designed as a basis for self-certification. As such, they provide a single document presenting all covered compliance standards for all media. In addition, the workbooks are written from the facility operator's point of view, often based on day-to-day standard operations for businesses in that sector. These approaches enable the workbooks to be stand-alone documents, which means they are an easy and accessible reference for facility operators rather than requiring a facility operator to locate, assemble and interpret the wide variety of applicable MA DEP regulations.

The workbooks present environmental requirements in plain language that is understandable to the

How Does ERP Promote Pollution Prevention (P2) and "Beyond Compliance" Performance?

From the start, MA DEP designed ERP to promote pollution prevention as much as possible. Some of the techniques used to encourage P2 through ERP are:

- **Incorporating P2 into compliance assistance materials.** The ERP compliance assistance materials incorporate both regulatory requirements and "beyond compliance" practices. For example, the first section of the Printers Environmental Certification Workbook includes a discussion of "Pollution Prevention—First Step to Compliance" and a list of recommended P2 practices.
- **Relating environmental practices to employee health and safety.** The ERP materials convey to facility managers the importance of good environmental practices for employee health and safety. Identifying the relationship to their employees' health makes improving environmental performance more meaningful for small business owners. For example, the introduction to the Dry Cleaners Environmental Certification Workbook discusses the potential routes for exposure to perchloroethylene and the accompanying health threats.
- **P2-based regulatory standards.** MA DEP's ERP regulations set out standards that are based on P2 performance. For example, ERP standards limit the VOC levels in materials used by printers, requiring the P2 technique of substituting less harmful materials.

regulated community rather than as a verbatim recitation of regulatory requirements. To this end, MA DEP worked with facility operators and trade organizations in each sector to translate regulatory language into statements understandable to facility owners and operators. In addition, MA DEP made a special effort to ensure the workbooks were useful for facilities operated by non-English-speaking managers. For example, 40 percent of dry cleaners in Massachusetts are Korean, so MA DEP worked with the Korean Dry Cleaners Association to translate the workbook to overcome possible language barriers.

Massachusetts also used the workbooks to encourage pollution prevention by providing pollution prevention suggestions alongside the standard compliance practices for each requirement. In addition, the ERP workbooks educate facility operators about the environmental and public health impacts of their operations, as well as other related workplace health concerns. Providing such information helps facility operators see why meeting, and even exceeding, the requirements is important. For example, according to a survey of practices, many dry cleaners in Massachusetts did not realize the dangers of perchloroethylene to both public health and employee safety. Once they learned about those dangers through ERP, the dry cleaning sector in the state urged the MA DEP to adopt a more strict technology-based leak detection standard rather than the less strict olfactory standard.

2b. Compliance assistance workshops.
In conjunction with the ERP kick-off for each ERP sector, MA DEP conducted workshops in locations across Massachusetts. MA DEP worked closely with trade associations to determine how many, and in what locations, workshops should be held to reach the greatest number of facilities. In the workshops, MA DEP staff went over the ERP materials with facility managers. After the initial workshops, MA DEP meets annually with trade association representatives and plans follow-up strategies to communicate sector-wide problem areas and accomplishments to individual facility operators. MA DEP holds workshops as needed, based on problem areas identified from MA DEP inspections, certification reviews and data analyses, to update the regulated community on any changes in requirements. This approach relies on an objective analysis of compliance status data to determine the content and frequency of workshops rather than just holding general workshops on a regular schedule.

Tool 3: Performance Measurement

Performance measurement, in any program, is vital for sound decisionmaking. Performance measurement allows an agency to evaluate both the regulated community's performance as well as the performance of the program itself. This enables an agency to make informed decisions about resource allocation and priority-setting. In designing and implementing ERP, MA DEP kept these concepts in mind, making measurement a central component of the program at all stages.

In its ERP, MA DEP conducts two types of on-site inspections. Targeted inspections are conducted for the purpose of following up on specific facilities

where MA DEP believes closer examination is needed (e.g., inconsistent responses on self-certification forms, chronic filing of Return to Compliance Plans, etc.). Random inspections are conducted at statistically valid numbers of facilities before and after self-certifications in order to track sector-wide environmental performance over time. The ERP measurement system evaluates the environmental performance of ERP sectors using two data sources: MA DEP inspection checklists from the random inspections, and facility self-certification forms. As part of the measurement process, MA DEP inspectors conducted on-site inspections and completed detailed inspection checklists, both before and after facilities completed self-certification forms. While most of the MA DEP inspection checklist and self-certification form questions are designed to assess compliance with regulatory requirements, MA DEP also includes questions for each sector that relate to beyond compliance and P2 activities. MA DEP calls these checklist questions Environmental Business Practice Indicators (EBPIs). MA DEP uses these EBPIs to (1) calculate facility and sector compliance "scores" before and after ERP outreach and certification, (2) determine the statistical significance of changes in specific environmental indicators or of whole groups of facilities, and (3) evaluate the accuracy of self-certification forms submitted by ERP facilities. These analyses provide reliable data that MA DEP can use to allocate limited resources efficiently, and identify trends in environmental performance at a sector and at the individual facility level.

MA DEP does not necessarily evaluate data collected for each sector annually. The frequency by which data are evaluated is best determined by an understanding of the status of the sector, based on evaluations of previous data.

For example, MA DEP initially evaluated performance data for each sector every other year. Several years after ERP implementation has been in place, and based on an assessment of sound environmental performance in a sector, MA DEP is now considering moving towards a longer period of time between evaluation comparisons (e.g., 5 years).

The components of performance measurement for ERP are:

3a. Environmental Business Practice Indicators.
The EBPIs are industry-specific performance measures that MA DEP uses to provide a snapshot of facilities' environmental performance before and after certification, and to track facility and sector performance over time. They include practices that are required to be in place by regulations (e.g., weekly leak detection by dry cleaners), as well as voluntary P2 practices that serve as indicators of overall environmental performance (e.g., recommending that facilities have signs above sinks warning employees about the dangers of pouring toxic chemicals down sinks). EBPIs vary from sector to sector because envi-

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Examples of EBPIs

Printers:
- Are the fountain solutions used on offset web-fed lithographic presses alcohol-free?
- Is the printer meeting the 2 parts per million silver limit for industrial wastewater?
- Does the printer have a sign prohibiting discharge of process chemicals over sinks in work areas?
- Does the printer recycle aluminum printing plates?

Dry Cleaners:
- Does the facility discharge separator water to a sewer, tank, evaporator, or container and never to a septic system?
- Is leak detection performed weekly, following the workbook protocol and using proper leak detection equipment?
- Is there no odor of perchloroethylene readily detectable in the facility?
- Is the facility in compliance with quantity and time limits for hazardous waste storage?

Photo Processors:
- Is the facility meeting the 2 parts per million silver limit for industrial wastewater discharges to sewers?
- Is the facility sampling its wastewater discharges to sewers?
- Are hazardous waste containers closed except when wastes are added?
- Are all hazardous waste containers labeled "hazardous waste?"

ronmental requirements, practices, and complexity vary in different sectors. For example, there are air-related EBPIs for printers and dry cleaners, but not for photo processors, which do not pose a significant air pollution threat. In total there are 8 EBPIs for photo processors, 16 EBPIs for dry cleaners, and 18 EBPIs for printers (see box on this page for some examples of EBPIs).

3b. Establishing a baseline and comparing results.

MA DEP's first important step was to develop a complete inventory of all facilities in each sector. In addition to ensuring that all facilities are made aware of, and held accountable for, their environmental obligations, defining the universe of facilities also is essential to setting up a system of measurement and evaluation. By identifying the universe of facilities and conducting pre-certification inspections, MA

DEP established a baseline against which progress under ERP could be compared.

MA DEP designed its own evaluation methodology, and worked closely with a consultant in developing its baseline and executing specific statistical analyses. MA DEP randomly selected facilities from the covered sectors before the first round of ERP self-certification. Inspectors visited these facilities and completed checklists that describe the extent to which each facility's performance adheres to both regulatory and "beyond compliance" measures. The results of these inspections established the baseline against which a future random set of inspections, subsequent to self-certification, would be compared. By employing a statistical approach to performance measurement, MA DEP can base its performance measurement on a statistically valid sample of facilities in each sector that reliably indicates the performance of the whole group rather than having to obtain data from all facilities in a group. In the case of the dry cleaning sector, for example, in year 2000, a random sample group of 39 dry cleaners – out of a total universe of 660 facilities – were inspected prior to certification and another random sample group of 39 dry cleaners was inspected after certification. Because they are based on a statistically valid sample, these data reliably demonstrate the performance of the whole sector.

3c. Evaluation methodology.

The random inspections that are conducted prior to and after the state's initial self-certification deadline produce reliable and extensive information on environmental performance in each industrial sector. MA DEP can use the data to measure performance from several perspectives, such as sector-wide performance, individual facility performance, and performance for individual indicators (these indicators are made

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Ensuring the Accuracy of Reported Data

The annual ERP certification requires facilities to self-report their compliance status to MA DEP. However, ERP is a "Trust but Verify" program. MA DEP verifies the accuracy of data submitted by industry in self-certification forms in a unique and efficient way—it conducts a correlation analysis. This analysis compares data from checklists completed at a statistically valid number of field inspections to data contained in the same facility's certification forms to see how often what the inspector reports in the field is the same as what a facility self-reported. After determining a correlation rate, MA DEP can then make inferences on the entire universe and from several perspectives, such as sector-wide accuracy, individual facility accuracy, and individual indicator accuracy.

MA DEP found a strong correlation between the industry self-reported data and that compiled by field inspectors. For example, after the first annual self-certification by the dry cleaning sector, MA DEP found that 77 percent of dry cleaners' self-certification data correlated with that compiled by MA DEP inspectors. In 19 percent of the cases, facilities identified a certain item as in compliance, whereas the inspector did not. In 4 percent of the cases, a facility identified a certain item as not being in compliance, whereas the inspector did. In areas where MA DEP determines there is disagreement with the self-reported data, there is traditional enforcement follow-up.

This accuracy correlation analysis is an important part of ERP's self-certification tool. It allows MA DEP to have confidence about the accuracy of self-certification data and, in doing so, allows MA DEP to draw inferences on performance for an entire sector based on a statistically valid number of randomly selected facilities.

up of both regulatory and non-regulatory requirements and a subset of those are EBPI's). The evaluation methodology measures the program's effectiveness within and among business sectors. Having this capability provides MA DEP with an important tool to focus on sectors, facilities, or business practices of particular concern.

3d. Use of outcomes to effectively deploy resources.

MA DEP envisions that the EBPI analysis results will increasingly be used to target MA DEP's resources toward sector issues or behaviors that are of particular concern. For example, if a sector's level of performance becomes significantly higher than an established or expected rate of performance, MA DEP may decrease the number of inspections or audits it conducts in that sector. On the other hand, if a sector's performance is low, MA DEP may increase inspections, compliance assistance, or enforcement in that sector. Similarly, if specific EBPIs show low average performance, future compliance assistance materials, as well as future inspections, could focus on compliance with the regulations related to those EBPIs.

3e. Reporting of results.

EBPI analysis results provide an important source of information not only for DEP, but also for the regulated community and the public. DEP is in the process of using inspection and certification results to produce an annual industry "Performance Report" for each sector. The industry "Performance Report" will include information regarding average performance for the industry, changes in industry performance over time, and calculations of the actual changes in overall multimedia release levels by sector. In addition, the industry "Performance Reports" will include discussions on compliance and enforcement rates within the sector and information on chemicals of concern. MA DEP intends to make these Industry Performance Reports available on its Web page.

Compliance Assurance and Enforcement Under ERP

ERP complements traditional compliance and enforcement techniques by using certification and inspection data to identify poor performance and cases of non-compliance. Business sector and individual facility performance data allow MA DEP to effectively target limited agency resources and to balance its use of compliance assistance and enforcement. As it gains more experience in implementing ERP, MA DEP is also developing and testing techniques to enhance its effectiveness and efficiency in administering compliance assurance and enforcement activities for whole business sectors with numerous individual facilities. The major elements of the ERP compliance assurance and enforcement process are:

Getting All Covered Facilities into the Regulatory System

MA DEP took progressive steps towards identifying and confirming the universe of facilities under ERP. During ERP roll-out, compliance assistance was offered (which included distribution of workbooks, conducting workshops, and working with trade associations) along with certification packages. MA DEP then compared the number of returned facility certification forms as well as the number of facilities that reported they were "not applicable" against the original estimated universe. Warning letters were then issued to potential non-certifiers, and telephone calls and inspections were made for facilities that reported they were "not applicable." Facilities that were verified by MA DEP as being covered by, or subject to, ERP and that failed to submit a certification to the Department, were generally issued Notices of Non-Compliance. Penalty actions were also administered for multiple non-responders.

Conducting Oversight of the Self-certification Process

During each annual self-certification period, MA DEP reviews incoming self-certifications for "red flags" (e.g., inconsistent responses, missing responses to questions). In addition, MA DEP reviews all Return to Compliance (RTC) plans to determine if the content and schedule contained in the plan are appropriate and acceptable. All facilities that submit a RTC Plan receive MA DEP follow-up (e.g., letters, phone calls, or inspections) to ensure that the facility has, in fact, returned to compliance on the schedule specified in the plan.

Performing On-site Inspections

Two types of on-site inspections are conducted by MA DEP:

- **Evaluation inspections** are performed at a random group of facilities to determine compliance and to gather evaluation data. Before certification, the primary purpose of gathering evaluation data was to establish a baseline of performance. Internal guidance was developed at MA DEP to allow inspectors to vary from the standard MA DEP Enforcement Response Guidelines which require a minimum response of issuing Notices of Non-Compliance (NON) for all lower-level violations. Instead, MA DEP issued Notices of Deficiency (NOD), which are not considered a formal enforcement action, to lower-level violations found during these random evaluation inspections of ERP facilities. The NODs informed facilities of their violations and directed them to make a correction or face formal enforcement action.

  After the initial certifications were submitted, a second round of random evaluation inspections were conducted by MA DEP inspectors to both determine compliance and to gather ERP evaluation data to compare against the baseline. Any violations found during this round of random inspections were handled following standard MA DEP Enforcement Response Guidelines.

- Based on its review of self-certifications, MA DEP identifies facilities for targeted inspections including, for example, facilities whose self-certifications raised "red flags," non-responding facilities, facilities for which a citizen complaint was received, facilities with one or more RTC Plans, and other factors. The targeted inspections are to fully evaluate compliance, and any violations found are handled following standard MA DEP Enforcement Response Guidelines.

  Between 1997 and July of 2001, MA DEP conducted approximately 400 inspections (which were both random and targeted). From those inspections, 158 enforcement actions were taken, including issuance of 149 Notices of Non-Compliance and pursuit of 9 higher-level enforcement actions (e.g., administrative orders, penalty actions).

Taking Higher-Level Enforcement Actions

Most cases of non-compliance under ERP are resolved early in the process of compliance assurance, generally through the issuance of Notices of Non-Compliance. However, some cases have gone to a "higher-level" enforcement. CVS and Walgreens, two larger retail store chains with photo processing operations, are two examples of higher-level enforcement cases under ERP. MA DEP collected fines of $32,500 and $22,500 from CVS and Walgreens, respectively, due to their submittal of inaccurate or incomplete data on annual self-certification forms. Using certification data, MA DEP determined that there were patterns of similar violations at 23 Walgreens stores and 38 CVS stores, and was able to achieve settlements at the corporate levels of both chains that included taking systematic steps to achieve and maintain compliance at 50 CVS stores and 35 Walgreens stores throughout Massachusetts. Among the more serious deficiencies, the companies failed to provide the required data to verify that wastewater from their silver-recovery equipment met state discharge standards.

Creating New Enforcement Tools:

In addition to employing the standard enforcement tools described in its Enforcement Response Guidelines, MA DEP also developed the Reporting Penalty Assessment Notice (RPAN) for ERP. The RPAN is a standardized enforcement document that includes a set penalty for facilities that fail to submit required certifications. The RPAN allows MA DEP to efficiently take a large number of enforcement actions against facilities that do not certify. This creates a level playing field for most companies that do certify. As of this date, MA DEP has issued more than 40 RPANs.

How ERP's Materials Are Linked

Both MA DEP and EPA concur that the ERP tools work best when used together. The tools and related materials are closely linked to each other in order to work as a system. All the ERP materials are designed to correlate with one another and are based on the standards in the MA DEP regulations (see Figure 3).

Figure 3: The Links Between ERP Materials
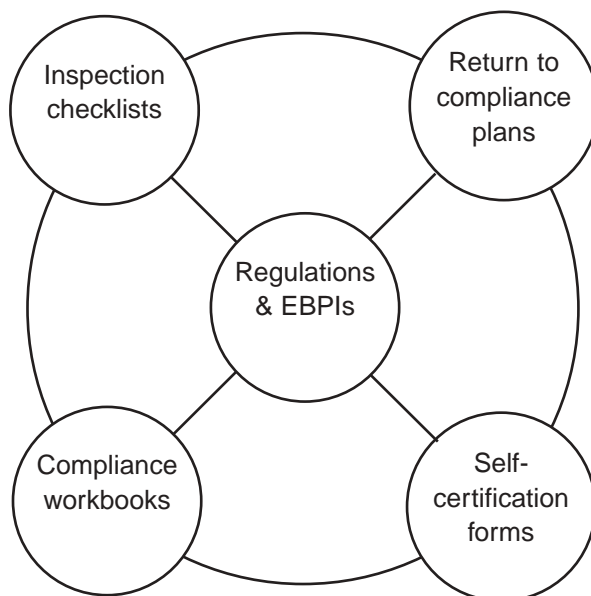
All materials developed under ERP are linked. Figure 4 illustrates that there are direct connections between the text in ERP regulatory standards, inspection checklists, compliance assistance workbooks, EBPIs, and the self-certification forms. Thus, any one requirement can be located in several documents.

Figure 4: An Example of the Parallels Between Individual ERP Materials

Inspection checklist: "If the facility is on sewer and has no local permit, or their local permit is greater than 2 ppm, is this facility in compliance with state standard 2 ppm? [Section 3.0, 3.1, 3.2]"

Return to compliance plans: "I am out of compliance with Question 9 on the certification form and requirement number 3.0 in the workbook. The specific violation is that this facility has exceeded the state's 2 ppm standard for silver discharge to the sewer. The total exceedance was 4 ppm. As a result this facility will have in place by X date a management system to monitor and replace treatment cartridges more frequently to ensure we are not exceeding the state's 2 ppm standard."

Regulations: "Each photo processor shall not discharge or ship industrial wastewater to a POTW unless the wastewater from photo processing contains no more than 2 mg/l (i.e. 2 parts per million) of silver, measured in accordance with 310 CMR 71.05(3)."
EBPIs: "Is the facility meeting 2 ppm? [Section 3.0, 3.1 or 3.2]?"

Compliance workbooks: "The state has a limit of 2 ppm of silver in photo processing wastewater. If the local POTW requires photo processors to have an individual permit with a discharge limit less than 2 ppm for silver, then photo processors must comply with the more stringent limit. If the local POTW has silver discharge limits of higher than 2 ppm, then photo processors must comply with the more stringent state 2 ppm limit."

Self-certification forms: "Question 9: Are you in compliance with the 2 ppm silver discharge limit set by DEP for photo processing wastewater. Refer to Section 3.0, 3.5:[3.5a, 3.5b] in the Workbook."
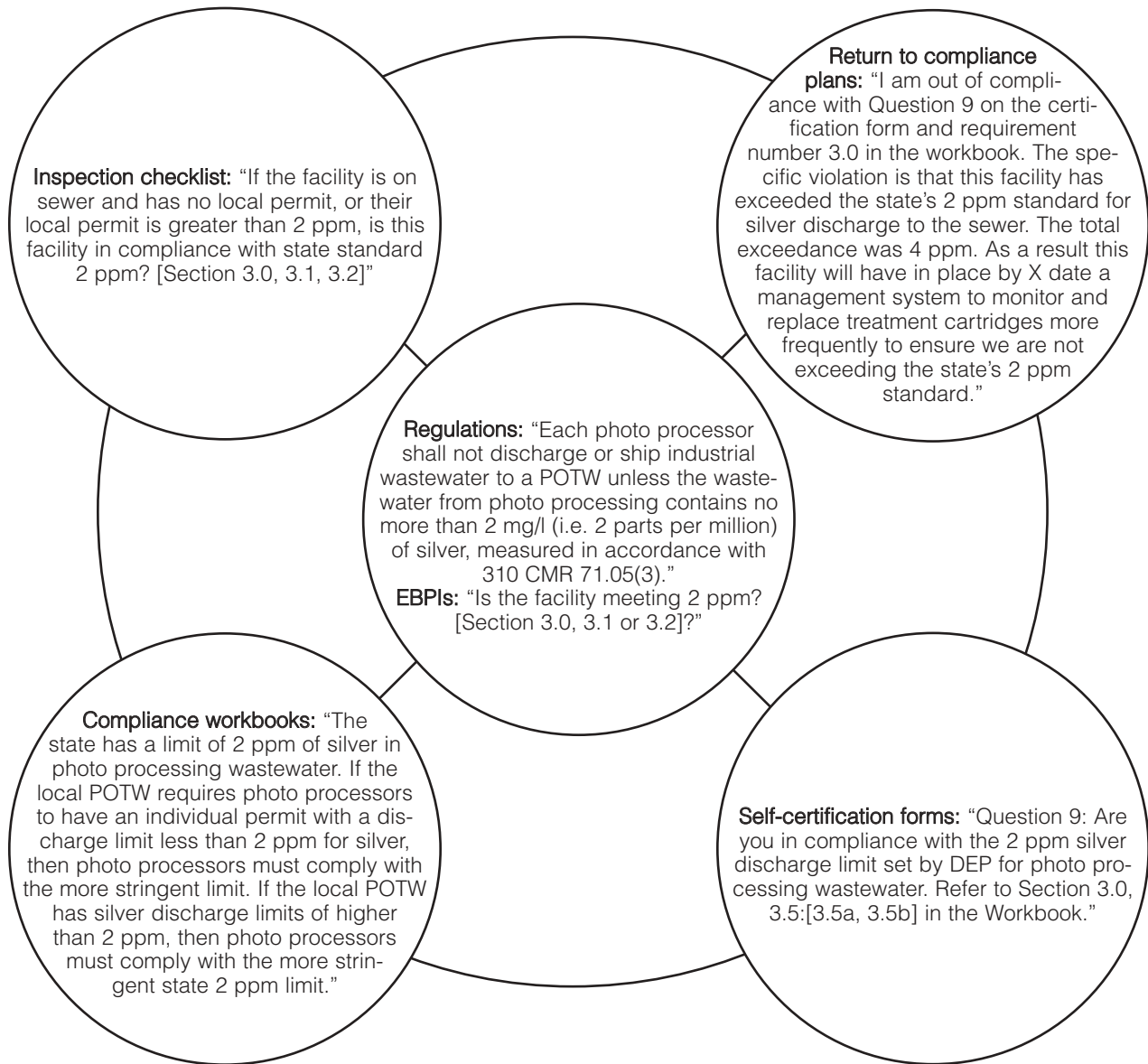
Figure 4 illustrates how the language in various ERP materials is linked. The figure refers to the MA DEP performance standard for photo processors that discharge or ship industrial wastewater to a Publicly Owned Treatment Works (POTWs), (see 310 CMR 71.05).

Institutional Framework Needed to Implement ERP

Regulatory Framework

Massachusetts promulgated several new regulations to implement ERP, including: (1) replacing permitting requirements with a self-certification requirement, (2) setting new multimedia standards that incorporate P2 practices; and (3) unifying differing standards among media regulations, such as setting a single record retention period for all records. Although MA DEP adopted these new regulations, regulatory changes are not always necessary to use an ERP-type approach.

The ERP regulations eliminated a number of permit requirements, including:

- State sewer discharge permits for printers, dry cleaners and photo processors.
- Class A hazardous waste recycling permits for printers and photo processors.
- Air source registration and air emissions plan approvals for printers.
- Certain record-keeping requirements for dry cleaners.
- Holding tank permits for photo processors that hold non-hazardous wastewater in tanks for off-site treatment.

In place of these eliminated permitting and reporting requirements, the regulations require all ERP-covered facilities to self-certify compliance annually and to meet new sector-wide standards that are also part of the ERP regulations.

Staffing

MA DEP estimates that a total of 4.1 dedicated Full Time Equivalents (FTEs) are used to operate the existing ERP for the dry cleaning, photo processing and printing sectors. Only the ERP Program Manager and Assistant Program Manager are dedicated full time to ERP; the three ERP Sector Managers have other duties at MA DEP. The breakdown of roles and responsibilities for agency staff dedicated to ERP is as follows:

- ERP management (2FTE)—The ERP Manager and Assistant Manager oversee all ERP activities, including maintenance of existing sectors and development of new sectors. The ERP Managers provide support to all other staff assigned to ERP, work to ensure coordination and consistency across sectors, and maintain communication both with upper management at MA DEP and with EPA.
- Sector managers (0.7 FTE each, for a total of 2.1 FTEs for 3 sectors)—MA DEP designates a manager for each ERP sector. These managers are responsible for managing and evaluating sector data, ensuring that regulations and outreach materials are kept up to date, developing and implementing compliance assurance strategies, and communicating with regulated businesses.

In addition to the 4.1 dedicated ERP FTEs, additional resources are applied to ERP as part of MA DEP's core operating programs. A description of these responsibilities along with the relative percentage of the programs' time that is dedicated to ERP follows:

- Information management staff (1.0 FTE of all information management resources)—The Systems Integration and Data Analysis Unit provides ERP with information management support. For new sectors, this group assists with identifying facilities in the targeted sector and creating data management systems. Information technology staff take the lead on developing and implementing ERP data entry forms and database systems. For existing sectors, the data group provides support and guidance to sector managers on data management.
- Compliance and enforcement staff (0.3 FTE of all compliance and enforcement staff)—Compliance and enforcement staff provide guidance and support in developing and implementing compliance and enforcement strategies for ERP sectors. Roles include developing inspection checklists, generating facility lists for random and targeted inspections, and conducting inspections and other enforcement activities.
- Director of the business compliance division (0.2 FTE of the Director's time)—The Division Director oversees ERP as well as program development and implementation support services for all MA DEP business-related regulatory programs, including air quality, hazardous waste, solid waste and industrial wastewater discharge programs.

Information Management

The developers of ERP envisioned a totally automated information management system as part of the program. Under the envisioned system, facilities would submit certifications online or in machine readable forms to be fed into the ERP database, and DEP would have an automated system for verifying completeness of certifications, flagging potential problems for compliance and enforcement follow-up, and performing statistical analyses of data. Facility-specific ERP certification data and other results would then be made available to the public on MA DEP's web site.

In practice, ERP has not yet attained these goals due to past issues, such as concerns about the security of the state government's Web server for Web-based filing. The current ERP information technology system is conventional, with paper certification submissions, manual data entry, and certification review. The original vision of an automated system is, however, technically feasible, and MA DEP continues working toward an electronic alternative. MA DEP has received funding for a continued information management effort through the Massachusetts "dot.Commonwealth" e-government initiative and some federal resources to move forward with its automation goals.

3. Results to Date

MA DEP has documented results from ERP in six major areas: Universe Identification, Program Results, Environmental Results, Government Efficiency, Public Accountability, and Flexibility for Businesses. Together, these results provide evidence of the efficacy of ERP's design and its usefulness as an alternative regulatory approach.

Complete Universe of Regulated Facilities

A major success of ERP has been the significant improvement in identifying regulated facilities. For instance, MA DEP identified approximately 2,200 firms eligible for ERP in the year 2000. Based on 2000 certification data, over 95 percent of the identified universe reported their status under ERP. Prior to ERP, very few firms were even known by government. As each year under ERP passes, that percent has increased. The most notable increase in coverage for a single sector has been for the dry cleaning sector. Due to the large number of small businesses and the rapid turnover of business ownership, it has been historically difficult to track compliance status for whole business sectors under conventional permitting and enforcement programs. The percentage of dry cleaners on file at MA DEP increased from 10 percent to 98 percent of the estimated total number of dry cleaning facilities between 1997 and 2000.
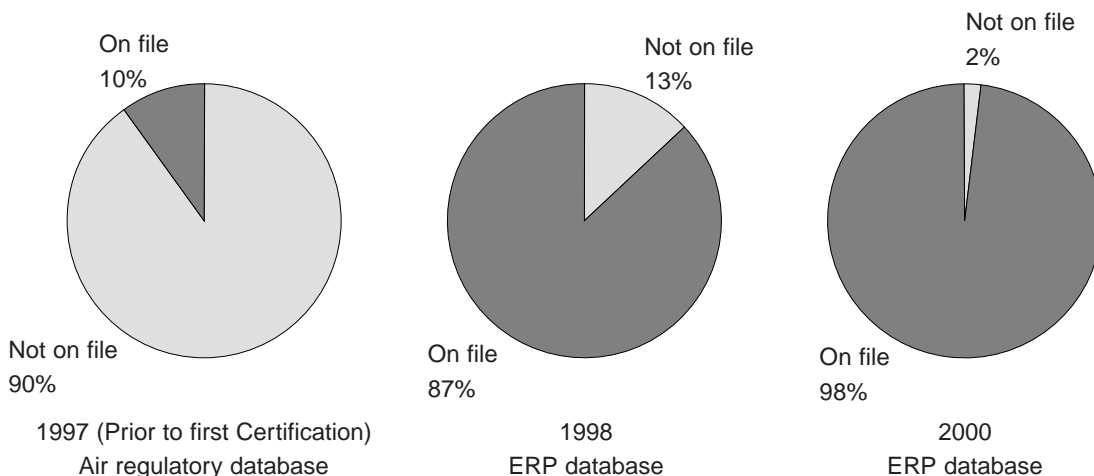
Program Results

From the start, the response to ERP by facilities has shown that this alternative regulatory approach is making a difference in environmental compliance and practices. In 1997, the first year of self-certifications, DEP's analyses indicate that 80 percent of identified dry cleaners and photo processors accurately completed self-certifications. Ten percent of all completed certifications were accompanied by Return-to-Compliance Plans. This means that 10 percent of all certifiers self-evaluated their compliance status, disclosed their non-compliance to MA DEP, and submitted a plan to return to compliance before any MA DEP inspections were performed. Thirty-five percent of the completed RTC Plans included changes, such as installation of silver recovery systems at photo processors, which will result in actual decreased environmental impact. All RTC Plans are reviewed by MA DEP and follow-up field and telephone audits are performed as deemed necessary to ensure facilities follow through on their plans.

Environmental Results

MA DEP tracks environmental results based on the data from its own inspection checklists and the facility self-certification forms. During ERP's initial implementation, MA DEP would conduct an evaluation comparison for each sector, every other year.

Figure 5: Percentage of Dry Cleaners in MA DEP Databases from 1997 to 2000

On file
10%

Not on file
90%

1997 (Prior to first Certification)
Air regulatory database

Not on file
13%

On file
87%

1998
ERP database

Not on file
2%

On file
98%

2000
ERP database

Following several years of ERP implementation and positive assessments of a sector's environmental performance, MA DEP is considering extending frequency during which it conducts its evaluation comparisons (e.g., 5 years). The facility and sector performance scores are based on a scale of 1 to 10, with 10 reflecting the highest performance. For example, a facility with an overall environmental EBPI performance score of 7.8 adhered with 78 percent of the EBPIs. As a result of ERP's performance measurement tools, MA DEP is able to reliably report on environmental results and progress in ERP's sectors in a unique way, based on statistically sound data that provide insights into compliance status as well as overall environmental performance. MA DEP is able to use its performance measurement

inspections performed in 1998 and 2000. The printing sector was added to ERP a year later; data are shown for the baseline (1998) compared with inspections after the first year of self-certification (1999).

For the dry cleaning and photo processing sectors, MA DEP reports on baseline data from 1997 against the post self-certification data in 1998 (1st Evaluation Comparison) and also post self-certification data in 2000 (2nd Evaluation Comparison). For the printing sector, MA DEP reports on baseline data from 1998 against post self-certification data in 1999 (1st Evaluation Comparison).

Dry Cleaning

Overall performance for dry cleaners shows continuous improvement from the Baseline to the 2nd Evaluation Comparison in 2000.

Table 1: Sector Performance Score for All Indicators		
Baseline 1997 (Prior to self-certification)	1st Evaluation Comparison 1998 (After initial self-certification)	2nd Evaluation Comparison 2000 (After third annual self-certification)
8.3	8.6	9.0

metrics to examine ERP outcomes from many different perspectives, including:
- by individual facility.
- by environmental medium.
- by overall performance for a sector.
- by performance on key environmental practices.

The following summaries describe environmental results for each of the three sectors. The data come from random on-site inspections of facilities and compares a baseline (inspection results prior to ERP implementation) to subsequent years of the program (inspection results after certification). The dry cleaning and photo processing sectors show data for 1997 (the year the baseline was established) compared with

Table 1 above indicates that the dry cleaning sector's overall performance, as measured by all indicators from inspection checklists, has increased from 8.3 to 9.0 from the baseline in 1997 to the 2nd Evaluation Comparison in 2000. The improvement is primarily in air quality and hazardous waste performance indicators.

The next figure is a closer look at individual EBPI results for dry cleaners. EBPI's are simply a subset of "all indicators" and tend to be "higher-value*" measures selected by MA DEP to show environmental performance trends.

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* "Higher-value" measures tend to be those that best reflect the performance trend of the sector as determined by MA DEP.

Figure 6: Individual EBPIs—Dry Cleaners

Legend:
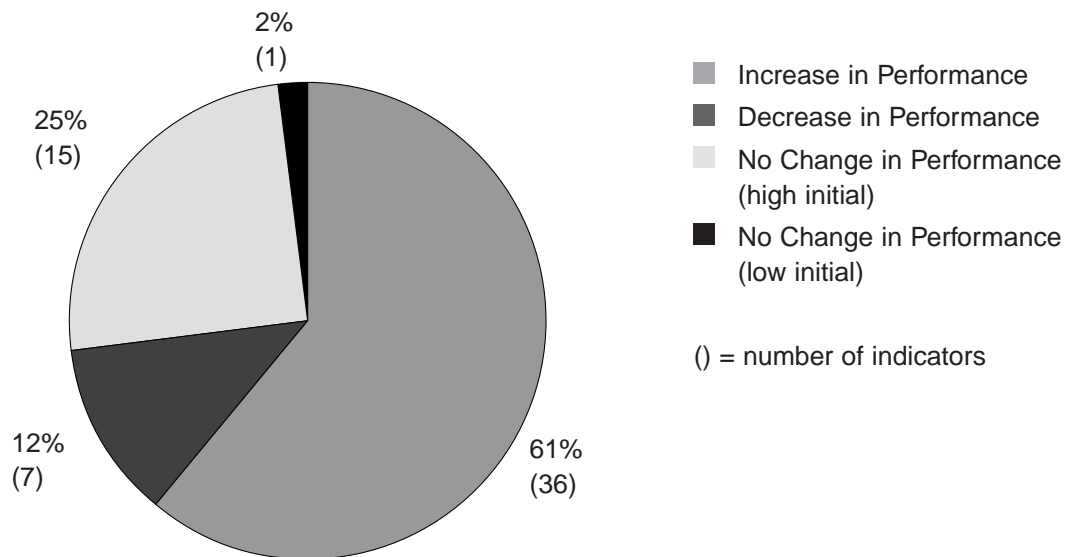- ■ (Baseline)—1997
- □ 2nd Evaluation Comparison—2000
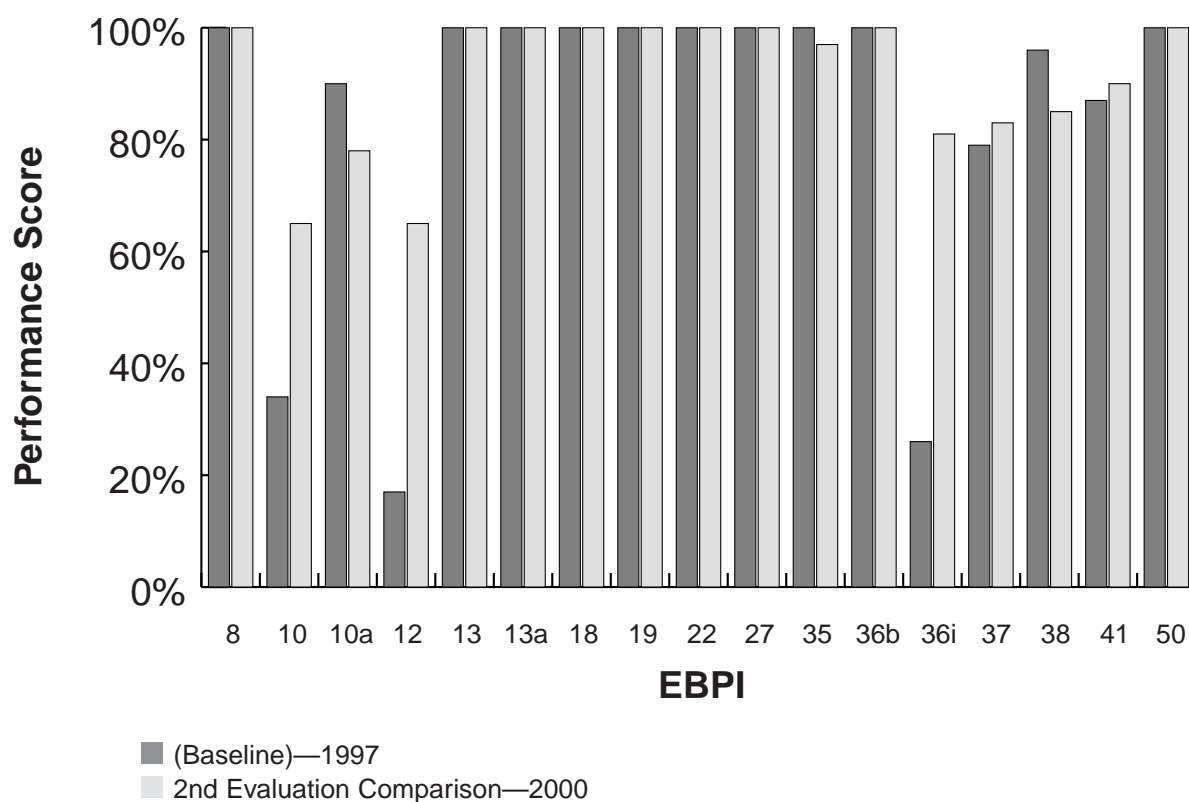
The figure above is based on scores for individual EBPI's from the bsaseline and the 2nd Evaluation Comparison. The "Performance Score" is the percentage of inspected facilities engaging in the behavior that is measured by the EBPI, regardless of whether the individual EBPI is a regulatory requirement or a "beyond compliance" measure.

The results show five EBPIs increased, nine did not change, and three decreased. Both EBPI 10 (weekly leak checks) and EBPI 12 (perchloroethylene record-keeping) showed a statistically significant improvement. MA DEP is able to confirm that, prior to ERP, only 33 percent of dry cleaners in 1997 were engaging in leak checks. After ERP, the number of dry cleaners performing routine leak checks increased to 66 percent in 2000. This improvement, when applied across the entire sector, results in an estimated reduction of 22.5 tons of perchloroethylene emissions to the air.*

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* It is MA DEP's practice to document all assumptions for its calculations (e.g., emission factors) that underlie these and other estimates.

Figure 7: Aggregate Indicator Trends Comparing the 1997 Baseline to 2000 Comparison Evaluation Data

Legend:
- Increase in Performance
- Decrease in Performance
- No Change in Performance (high initial)
- No Change in Performance (low initial)

() = number of indicators

Pie chart values: 2% (1), 25% (15), 12% (7), 61% (36)

The figure above illustrates the change in performance of dry cleaners for all indicators over time from the baseline in 1997 to the 2nd Evaluation Comparison in 2000. It depicts four outcomes: the percentage of facilities that had an increase in performance; the percentage of facilities that had a decrease; the percentage of facilities that had no statistically significant change in performance and previously had a high level of performance, thus maintaining their high level of performance; and the percentage of facilities that had no statistically significant change in performance and previously had a low level of performance, thus maintaining their low level of performance. While these data do not explain why facility behavior is positive or negative, it does indicate trends that inform MA DEP that 86 percent of facility responses show good performance, while 14 percent need further attention.

Printing

The results, as measured by all indicators on inspection checklists, show the printing sector improving performance under ERP. As table 2 indicates, the performance score increased from 7.4 to 8.7 from 1998 to 1999.+

Table 2: Sector Performance Score for All Indicators	
Baseline 1998 (Prior to self-certification)	**1st Evaluation Comparison 1999 (After initial self-certification)**
7.4	8.7

The next figure provides a closer look at EBPIs for printers. EBPI's are simply a subset of "all indicators" and tend to be "higher-value*" measures selected by MA DEP to show environmental performance trends.

+ The table indicates that the printing sector's overall performance, as measured by all indicators from inspection checklists, increased from 74 percent to 87 percent, from the baseline in 1998 to 1st Evaluation Comparison in 1999. Data for the printing industry are available for two years because the printing sector ERP started one year later than the dry cleaner and photo processor sectors.

* "Higher-value" measures tend to be those that best reflect the performance trend of the sector as determined by MA DEP.

Figure 8: Individual EBPIs—Printers

Legend:
- Frequency (Baseline)—1998
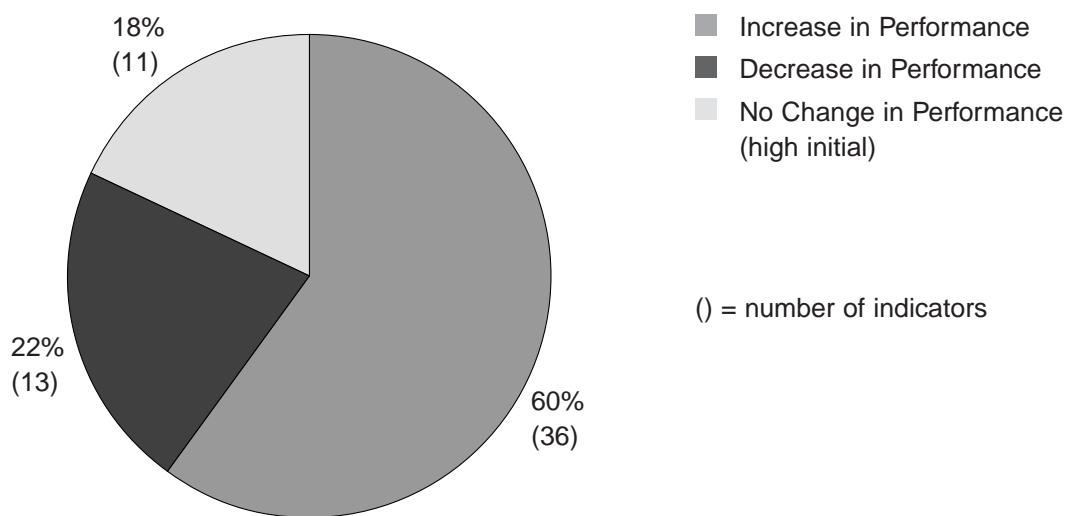- First Evaluation Comparison—1999
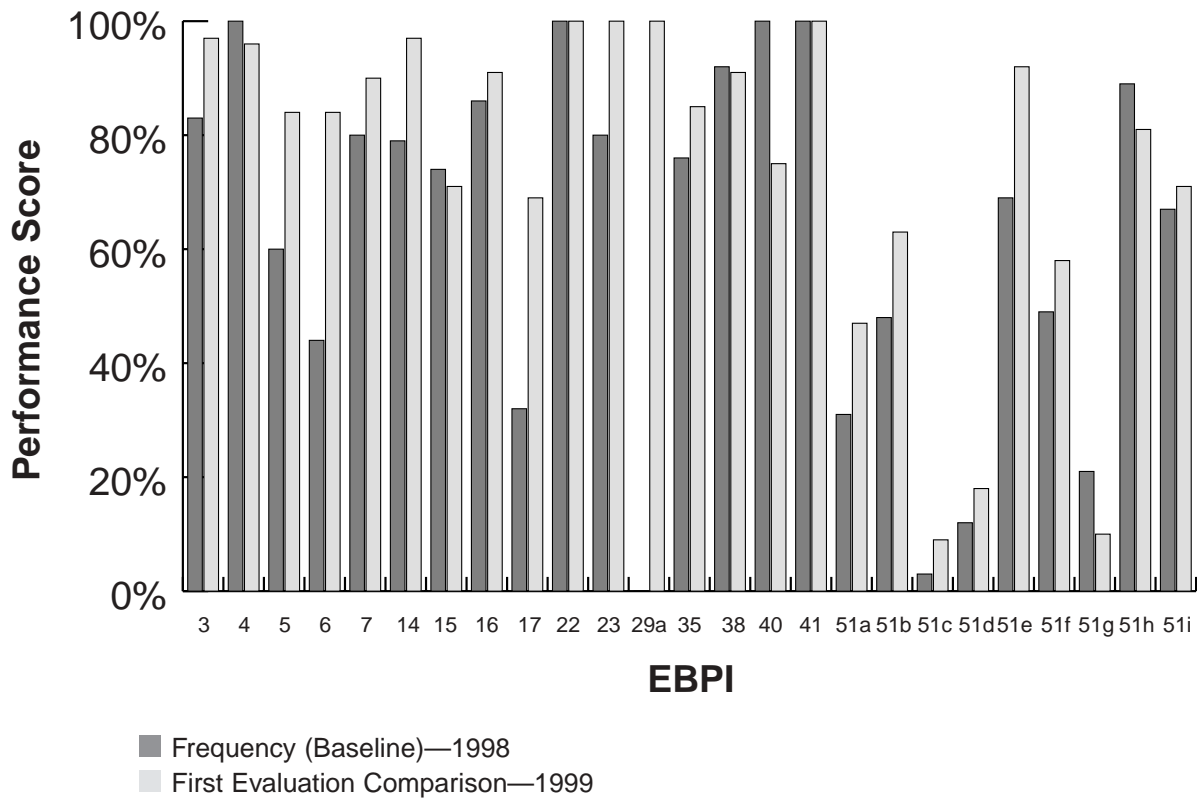
The figure shows scores for the baseline (1998) and for the 1st Evaluation Comparison that are based on data collected through field inspections in 1998 (the baseline) and 1999. The "Performance Score" is the percentage of inspected facilities engaging in the behavior that is measured by the EBPI, regardless of whether the individual EBPI is a regulatory requirement or a non-required "beyond compliance" measure. The results show eight regulatory EBPIs and nine P2 EBPIs improved. EBPI 3 (quantity and time limits for hazardous waste; EBPI 6 (hazardous waste container labeling); and EBPI 51e (use of alcohol-free fountain solution) all had a statistically significant improvement. Four EBPIs decreased, though none of these decreases were statistically significant.

Some of the improvements in performance levels have led to tangible changes in environmental impact for the sector. For example, the performance rate for applicable standards for press cleanup solutions (e.g., use of lower VOC products) increased from 77 percent in 1998 to 85 percent in 1999. This improvement extrapolates to an estimated four-ton emissions reduction annually for the entire sector.

Figure 9: Aggregate Indicator Trends Comparing the 1998 Baseline to 1999 Comparison Evaluation Data

18%
(11)

22%
(13)

60%
(36)

■ Increase in Performance

■ Decrease in Performance

□ No Change in Performance
(high initial)

( ) = number of indicators

The figure above illustrates the change in performance of printers for all indicators from 1998 to the 1st evaluation comparison in 1999. It depicts three outcomes: the percentage of facilities that had an increase in performance from 1998 to 1999; the percentage of facilities that had a decrease in per-

Photo Processing

The results, as measured by all indicators on inspection checklists, show the photo processing sector improving its performance under ERP. As Table 3 indicates, the performance score increased from 53 percent in 1997 to 92 percent in 2000.

Table 3: Sector Performance Score for All Indicators

| Baseline 1997 (Prior to self-certification)	1st Evaluation Comparison 1998 (After initial self-certification)	2nd Evaluation Comparison 2000 (Third annual self-certification)
5.3	6.0	9.2

formance from 1998 to 1999; the percentage of facilities that had no statistically significant change in performance and previously had a high level of performance, thus maintaining their high level of performance as reported for dry cleaners. While the data does not explain why facility behavior is positive or negative, it does indicate trends that inform MA DEP that 78 percent of facility responses show good performance while 22 percent need further attention.

The table indicates that most of the improvement in performance by photo processors took place between the 1st Evaluation Comparison in 1998 and the 2nd Evaluation Comparison in 2000. MA DEP speculates this may be a result of a meeting held with the Photo Processing Associations in early 2000, to identify low performance results for the sector, and communication of those results to facility operators.

The next figure is a closer look at individual EBPI results for photo processors. EBPI's are simply a subset of "all indicators" and tend to be "higher-value*" measures selected by MA DEP to show environmental performance trends.

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*   "Higher-value" measures tend to be those that best reflect the performance trend of the sector as determined by MA DEP.

Figure 10: Individual EBPIs—Photo Processors

Legend:
- ■ Frequency (Baseline)—1997
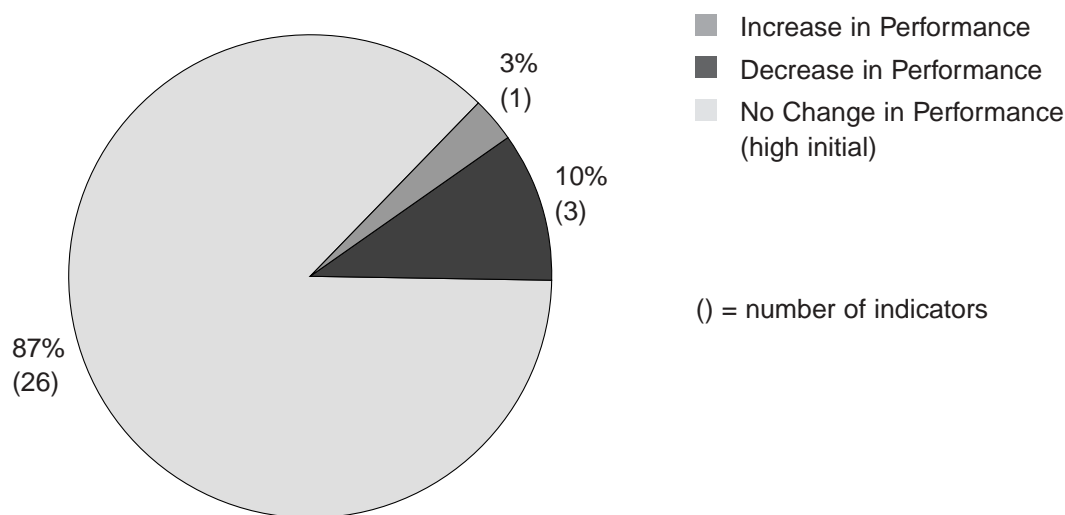- ▢ 2nd Evaluation Comparison—2000
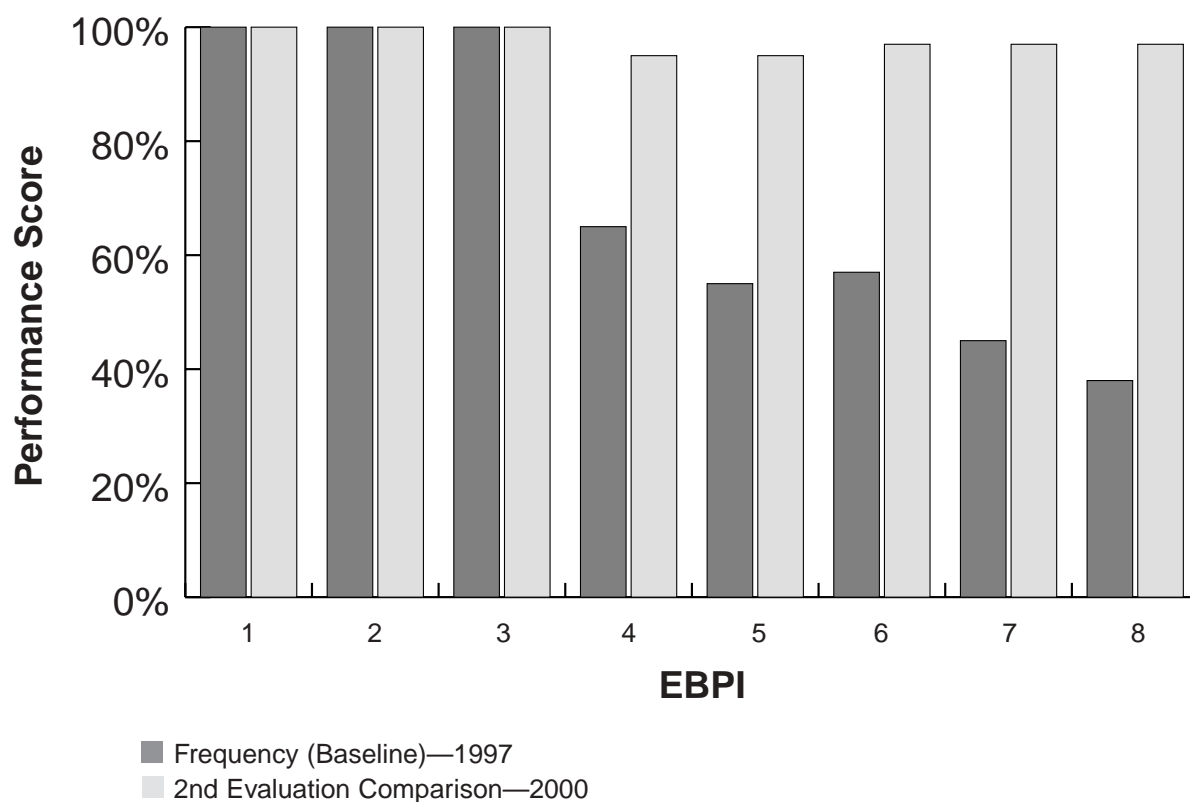
The figure shows scores for 1997 (the baseline) compared to the 2nd Evaluation Comparison in 2000. The "Performance Score" is the percentage of inspected facilities engaging in the behavior that is measured by the EBPI, regardless of whether the EBPI is one that relates to regulatory requirements or non-required "beyond compliance" practices.

The results show improvement in five EBPIs, with improvements for four of the five EBPIs (EBPI 5: hazardous waste container labeling, EBPI 6: 2 parts per million sewer discharge limit, EBPI 7: is facility sampling, and EBPI 8: industrial discharge sampling frequency), showing statistically significant improvement. Performance rates with the other three EBPIs began high and sustained those levels over time.

Performance on the EBPI 6 (2 parts per million limit for silver discharges) increased from 60 percent to 98 percent between the baseline in 1997 and the 2nd Evaluation Comparison in 2000, a 38 percent increase or improvement in performance.

Figure 11: Aggregate Indicator Trends Comparing the 1997 Baseline to 2000 Comparison Evaluation Data

Legend:
- Increase in Performance
- Decrease in Performance
- No Change in Performance (high initial)

() = number of indicators

- 3% (1)
- 10% (3)
- 87% (26)

The figure above illustrates the change in performance of photo processors for all indicators over time from the baseline in 1997 to the 2nd Evaluation Comparison in 2000. It depicts three outcomes: the percentage of facilities that had an increase in performance from 1997 to 2000; the percentage of facilities that had a decrease in performance from 1997 to 2000; and the percentage of facilities that had no statistically significant change in performance and previously had a high level of performance, thus maintaining their high level of performance as reported for photo processors. While the data does not explain why facility behavior is positive or negative, it does indicate trends that inform MA DEP that 97 percent of facility responses show strong performance, while 3 percent need further attention.

Government Efficiency

To accurately judge ERP's cost-effectiveness, it would be necessary to compare ERP's costs and relative results to the costs and results of operating a conventional regulatory program for the three sectors. In addition to requiring industry to self-identify and self-correct non-compliance, ERP is unlike conventional regulatory programs in that it uses data to decide which sectors could benefit the most from outreach and other resource investments. Because of these differences, it is difficult to compare ERP resource requirements to the level of effort that would be needed for a more conventional permit,

compliance, and enforcement program that achieved comparable performance results. MA DEP believes, however, that implementing a fully staffed conventional regulatory program for these three sectors would have required considerably more resources to implement than what is necessary to implement ERP.

Public Accountability (for Both Business and Government)

MA DEP believes ERP information provides the public with a comprehensive and more meaningful way to understand the compliance status and environmental performance of an individual facility as well as whole business sectors. The design of ERP provides the public with a straightforward assessment as to whether a facility is or is not in compliance and, if not, what steps are being undertaken to achieve compliance. Each company's self-certification is publicly available through MA DEP and, when efforts to fully automate ERP are complete, the self-certifications data will be available via the Internet. Similarly, results of inspections are included on the ERP Web site for public review. These options mean the public can easily determine a facility's compliance with all state environmental requirements.

ERP can also provide the public with a more in-depth understanding of the performance of a whole sector. The industry performance reports being pre-

pared by MA DEP will be included on the agency's Web site and will provide the public with quantitative analyses of environmental practices in that sector. The industry reports will provide overall environmental performance trends, performance trends related to each of the EBPIs, and environmental outcome measures such as pollution reductions. Similarly, the public is provided with greater transparency regarding the operation of the ERP program itself because reliable measurement allows the public to track the program's impact over time.

Flexibility for Businesses

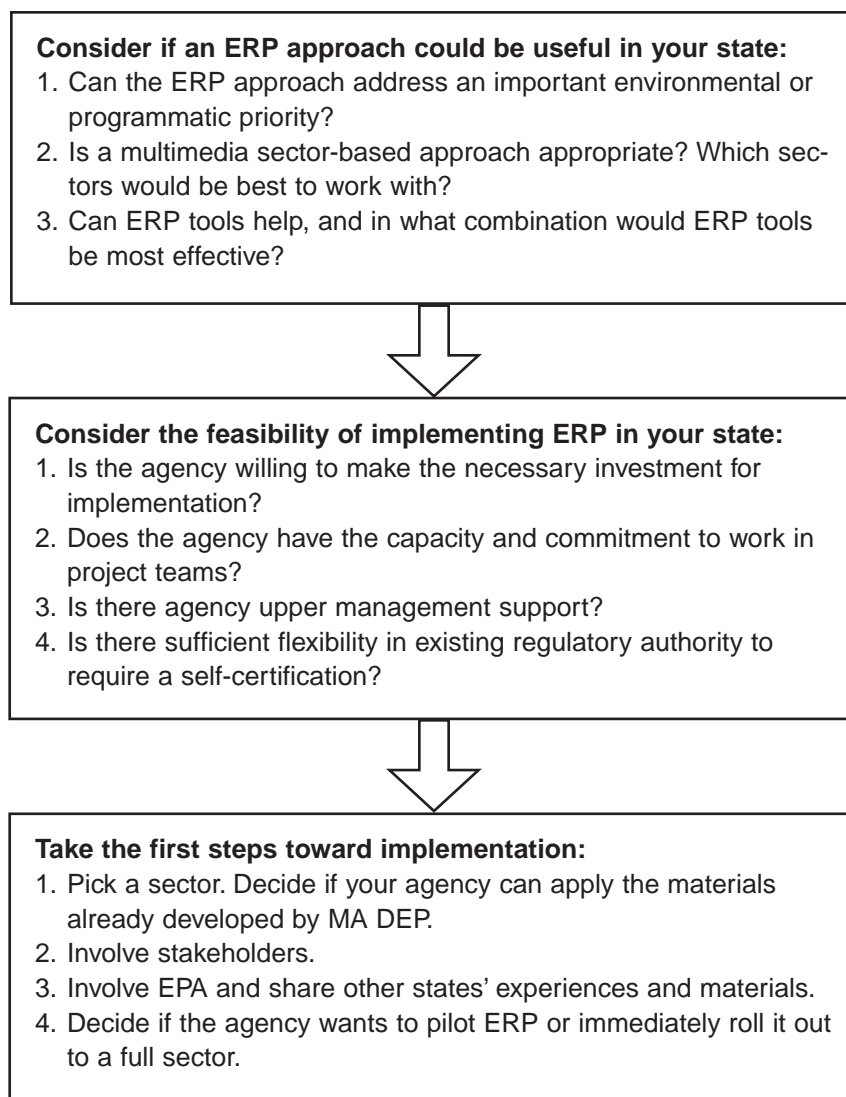By replacing permitting requirements with performance-based regulatory standards and annual self-certifications, ERP provides businesses with increased flexibility in two forms. First, many of the regulatory standards set under ERP are performance, rather than activity, based. Performance-based standards provide facility operators with greater flexibility to decide on the best approaches to meeting regulatory standards. Second, facility managers have flexibility under ERP to make certain process changes that would have previously required MA DEP preapproval due to individual permit requirements. Avoiding MA DEP preapproval can save significant time (and thus cost) in making process changes because, rather than having to wait for MA DEP to preapprove an operational change, the facility manager can simply notify MA DEP within 60 days after making the change.

4. Getting Started With ERP

This section provides practical advice for state agencies considering use of ERP. It describes a process that states can follow to determine whether ERP is appropriate and feasible for them, and next steps for implementation (see Figure 12 below). There may be other factors that individual states will want to take into consideration, beyond those described in this general description. For example, states that already have good compliance workbooks might want to develop complementary self-certification and performance measurement efforts. Also, ERP's measurement approach can be used as a tool to complement most compliance and technical assistance programs.

Figure 12: Getting Started with ERP

Consider if an ERP approach could be useful in your state:
1. Can the ERP approach address an important environmental or programmatic priority?
2. Is a multimedia sector-based approach appropriate? Which sectors would be best to work with?
3. Can ERP tools help, and in what combination would ERP tools be most effective?

Consider the feasibility of implementing ERP in your state:
1. Is the agency willing to make the necessary investment for implementation?
2. Does the agency have the capacity and commitment to work in project teams?
3. Is there agency upper management support?
4. Is there sufficient flexibility in existing regulatory authority to require a self-certification?

Take the first steps toward implementation:
1. Pick a sector. Decide if your agency can apply the materials already developed by MA DEP.
2. Involve stakeholders.
3. Involve EPA and share other states' experiences and materials.
4. Decide if the agency wants to pilot ERP or immediately roll it out to a full sector.

Consider If an ERP Approach Could Be Useful in Your State

A state should consider the following when determining whether an ERP approach could be useful to its needs:

Can the ERP approach address an important environmental or programmatic priority?

It may be helpful to consider whether the objectives aimed for (and largely achieved) by MA DEP match with your agency's environmental objectives or priorities. It also may be helpful to consider the State's environmental priorities and whether ERP can be a cost-effective way to address them. In the case of Massachusetts, the state felt that it was effectively overseeing environmental requirements at larger facilities but that it needed to better oversee operations of small facilities in a way that cost less than conventional regulatory programs. For other states, ERP may be particularly applicable when development of a "general permit" program is being considered. For Massachusetts, the major objectives of ERP were:

- Efficiently covering all facilities. While permitting is very effective for certain sectors, such as those involving smaller numbers of major facilities, cost issues make it difficult for agencies to keep up with permit renewals in sectors, such as printing and dry cleaning, that have a large and ever-changing universe of small facilities. One of MA DEP's goals in ERP was to more effectively identify and work with all facilities in these sectors.
- Effectively using compliance assistance to inform small businesses about environmental requirements and best practices. In sectors with small businesses that often change ownership, the problem of lack of knowledge of requirements exacerbates other significant barriers to achieving environmental compliance, such as limited resources. This issue is being addressed by compliance assistance programs across the country. ERP takes compliance assistance one step further by linking compliance assistance materials to compliance certification. Other benefits of ERP for small businesses are described in the accompanying text box.

- Effecting lasting change at facilities. MA DEP sought to make environmental performance a more central issue at small facilities. By placing more of the burden of environmental compliance on high-level facility managers or company owners, ERP brings environmental compliance to the attention of facilities without using as many agency resources as would be needed to attract attention solely through increased inspections and enforcement actions.

Is a multimedia sector-based approach appropriate? Which sectors would be best to work with?

Once you have decided whether ERP may effectively address environmental priorities in your state, the next step is deciding if a sector-based approach is appropriate. It is important to determine whether there is an identifiable sector that is a priority or concern in the state and whether circumstances are conducive to working with that sector using the ERP approach. For example, Massachusetts chose its ERP sectors based on the high number of small facilities and its own historic difficulty in addressing those facilities with conventional approaches. MA DEP saw the benefits of getting more facilities into the regulatory system and then it considered a number of related issues in identifying the specific sectors to work with:

- Does the sector have a significant environmental impact as a whole? Any innovation takes an investment of resources, and to ensure a sound return on that investment, the overall environmental impact must be significant. For example, Massachusetts has determined that, while individual printers may not have a large environmental impact, the sector as a whole is equivalent to approximately 12 major sources of Volatile Organic Compounds (VOCs) as defined in the Clean Air Act. Likewise, the dry cleaning industry is equivalent to approximately 60 major sources of Hazardous Air Pollutants (HAPs).
- Is the sector relatively homogeneous with respect to its environmental issues? Can common interests be identified, as well as common barriers and drivers? For example, the dry cleaner sector was a good candidate for ERP because there is one

major environmental and employee health issue related to dry cleaners: the safe handling and use of perchloroethylene.

- Does the sector have an active trade association? Does the trade association have a cooperative relationship with the agency and show an interest in making an innovative project work? MA DEP found working with cooperative trade associations to be a real asset. The trade associations were able to help MA DEP locate and communicate with facilities and develop the necessary performance standards and supporting workbooks and workshop assistance. Having support of the trade association also increased the level of interest and trust on the part of individual facilities.

- Is the sector facing new or changing environmental regulations? While not necessary for ERP implementation, an already-planned change in regulations can offer a unique opportunity for an agency to step in and implement an ERP approach from the start. Implementing ERP for a sector in which new regulations are about to be promulgated would allow the agency to immediately appreciate the potential cost savings of an ERP approach versus a more conventional regulatory program.

Consider the Feasibility of Implementing ERP in your State

If you think ERP could be useful in your state, the next step is to consider your agency's readiness to implement ERP. There are three questions to consider at this stage:

Is the agency willing to make the necessary investment for implementation?

Once implemented, ERP's maintenance costs are very limited. Start-up costs for implementing ERP does not have to involve a large investment of resources. MA DEP invested approximately $150,000 per year, or 1 percent of its staff resources (14 FTE over 3 to 4 years) in starting ERP. Although MA DEP made this level of resource commitment in initially developing ERP, it is

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Small Business Benefits from ERP

Opportunity to be a good environmental citizen. "I sleep better knowing I am in compliance with the regulations."

   Fee consolidation and cost reductions compared to case-by-case permitting. Prior to ERP, a mid-size Massachusetts printer found that it was costing more than $2,000 in permit fees versus the annual $200 ERP fee.

   Education features. "I didn't know what an NPDES permit was, but I knew I did not want to check the box that said I had no permit" (Massachusetts Dry Cleaner); "Now, I have a handle on the whole package rather than a piece here and a piece there..." (Massachusetts Printer)

   More effective understanding of environmental expenditures. "...with the certification requirement, now he (the boss) recognizes how he has to spend the money" (Massachusetts Printer).

   Evenhandedness. ERP helps 'level the playing field' between those complying with regulations and those knowingly or unknowingly skirting their regulatory responsibilities.

   Reduced workplace exposures of perchloroethylene for dry cleaners. The ERP self-certification process requires weekly leak checks.

   Clear Accountability. ERP directly mandates that a high-ranking facility official certify compliance with environmental requirements. In doing so, ERP establishes a clear "chain of command" for environmental requirements at the facility. In addition, businesses feel that ERP provides them reassurance because their environmental requirements are communicated to them and, in doing so, facility operators can better internally manage their environmental obligations.

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*   All quotations are drawn from "Evaluation of the Massachusetts Environmental Results Program," Environment.gov, National Academy of Public Administration, June 2000.

expected that start-up costs for another state would be considerably lower due to the fact that the MA DEP approach, model and "lessons learned" are available. Pooling material development with other states, including several that are currently developing materials on the auto repair sector, or relying on existing MA DEP materials, will also assist in keeping start-up costs to a minimum. Still, ERP will involve some investment of resources, both an up-front investment in getting ERP started and a longer-term investment to keep it running. MA DEP strongly believes that the investment is worthwhile given the benefits.

Does the agency have the capacity and commitment to work in project teams?

MA DEP's multimedia agency structure (e.g., air, water, and hazardous waste programs are organizationally combined) made it easier to create the multimedia teams needed for implementation. While advantageous, it is not essential for other states to have such a structure. The agency only has to be willing and able to create multimedia teams. Most state agencies currently have some projects underway that are multimedia or cross-program in nature and, therefore, have some understanding of what kind of team structure works for that particular agency.

Can you gain upper management support?

From its inception, ERP was strongly supported by high-level managers in Massachusetts such as the governor and the DEP Commissioner. MA DEP staff cite this high-level management support as an important factor in the program's success. If upper management does not already have an interest in ERP in your agency, the team should work to gain support by informing them of the program and its benefits.

What is your statutory or regulatory authority to require a self-certification?

MA DEP found that it did not need new statutory authority to implement ERP. It primarily relied on existing authorities to establish the sector standards and the general powers of the agency to establish the self-certification requirement. While it is likely that other states would also be able to identify sufficient flexibility in existing authorities for much of ERP's components, it would be prudent to confirm that sufficient authority exists to implement a new self-certification requirement.

Take the First Steps Toward Implementation

Pick a sector. Decide if you can apply the materials already developed by MA DEP.

The next step is to choose which sectors you want to focus on and decide whether you will need to create new materials for the program. The questions listed above in "Is a sector based approach appropriate? Which sectors would be best to work with?" should be helpful in deciding what sector or sectors to focus on.

A related question is whether you will need to develop new materials for the program. If you choose a sector that MA DEP has included in its ERP, you can adopt the existing ERP materials with minimal investment of resources. With several other states undertaking ERP-type programs (such as for the auto repair sector), additional resources are constantly becoming available. If you choose another sector, you can develop your own ERP materials based on the general framework developed by MA DEP.

Another initial question that a state may need to consider is its capacity to develop a statistically valid methodology. In an effort to assist states, EPA has developed a detailed generic statistical methodology that provides the reader with an overall approach that can be tailored by an individual state to meet its own needs. This generic statistical methodology is contained as an Appendix in this User's Guide.

MA DEP developed its set of tools to complement each other and believes that ERP is most effective when the tools are implemented in an integrated program. In addition, MA DEP has concluded that it is most effective if various ERP materials (e.g., inspector checklists, compliance assistance workbooks, self-certification forms) are prepared concurrently to ensure consistency among the materials. If you choose to use a different set of tools or a subset of MA DEP's tools, you need to ensure that they provide a similar balance between helping companies and holding them accountable.

Involve stakeholders

MA DEP made stakeholder involvement a key part of ERP. In addition to involving agency staff and the Massachusetts Office of Technical Assistance, the regulated community and the environmental community were both invited to be active participants in its development. This hands-on involvement helped the program to gain respect from all stakeholders and also facilitated program development. For example, stakeholders representing regulated facilities were involved in the design of the program standards, workshops and workbooks, providing practical input from those who would be using the materials.

Some of the stakeholders you may want to involve in developing and implementing an ERP approach are:

*   **Staff and management from within the agency.** Initially involving a variety of agency stakeholders, such as representatives from different management levels from different program offices, and staff with appropriate expertise and experience, promotes buy-in to the program at all levels and makes use of existing agency capabilities.
*   **Industry.** Trade associations or other industry representatives can be helpful participants in program development if the agency has a good relationship with them. Industry representatives have a significant stake in making programs such as ERP work because they stand to gain increased flexibility and reduced paperwork for their members, as well as a positive reputation with the government and the public.
*   **Environmental community.** The environmental community in your state may have concerns that ERP will lead to more lax requirements for businesses than an existing permit and compliance system. By ensuring the environmental community clearly understands that ERP is intended to increase the accountability of business, you can alleviate their fears that businesses will be "let off the hook."

A multi-stakeholder ERP advisory group that included representatives from EPA, other governmental bodies, environmental advocacy groups, business and industry, consulting firms, and the legal community was instrumental in developing the ERP program materials and requirements. By involving all parties in the development of program materials, MA DEP ensured that all parties' concerns would be considered in the resulting program. To allow further opportunities for stakeholder input, DEP included an extensive public review process in developing regulations for ERP.

Involve EPA

Involving EPA is especially important if you want to cover federal requirements (MA ERP currently does not include federal permit categories). In those cases, you will need to work closely with EPA to determine whether to include those federal requirements in your ERP and, if so, how to do so. There are a variety of mechanisms, such as ECOS Agreements, and Performance Partnership Agreements, available for states to work with EPA on innovative projects. EPA supports states' efforts to consider implementation of ERP in general; to determine the best mechanism for working with EPA in your state, you should work with your EPA region. EPA regions and headquarters are working very closely to support state efforts to develop ERP and ERP-like efforts.

Decide if you want to pilot ERP or immediately roll it out to a full sector

MA DEP launched ERP in 1996 with a demonstration project involving 18 small and medium-size businesses. The firms, which volunteered to participate, worked with MA DEP to develop process-specific performance standards. This approach was later used for the full-scale program. The Demonstration Project also tested other ERP techniques, such as self-certification and compliance assistance.

If you use MA DEP's ERP materials and approach as is, you should be able to skip this pilot stage, since the program has already been piloted. However, if you are designing an ERP for a new sector or using a different combination of tools from that used by MA DEP, you may want to pilot your program in order to fine-tune the requirements before proceeding to full-scale implementation. Also, if there are concerns in your agency, regulated community, or environmental community about how well ERP will work, a pilot stage with an evaluation component can demonstrate the effectiveness of the approach with a small set of facilities before taking the risk of implementing it with an entire sector.

The Rhode Island ERP Experience

The first state outside Massachusetts to adopt an ERP-type approach is Rhode Island. The Rhode Island Department of Environmental Management (RI DEM) is currently in the process of designing an Auto Body Certification Program based on the ERP model. The certification program is an outgrowth of a project begun by RI DEM in 1994 to study the occupational and environmental hazards of auto body shops and to identify and disseminate pollution prevention approaches for the sector. RI DEM has been strongly encouraging the application of certain P2 approaches in the auto body repair sector since 1997, and in 1999 DEM began developing an ERP-type certification. A multi-stakeholder workgroup, which includes representatives from RI DEM, RI Department of Health (RIDOH), the Narragansett Bay Commission (sewer authority), Davies Career and Technical High School, RI Department of Business Regulation, and the autobody shop sector, is currently developing materials for the certification program.

The current draft materials for the Auto Body Certification Program include several of the same materials used in Massachusetts' ERP, including:

- Compliance Certification Workbooks
- Self-Certification Checklists
- Return to Compliance Plans

When the certification program is brought into full implementation, all facilities licensed by the Department of Business Regulation as autobody or collision repair facilities will be expected to participate in the program. The Rhode Island program differs from the Massachusetts approach in several ways, most notably because the Rhode Island certification workbook and checklists contain distinct sections on occupational health and safety, and pollution prevention measures applicable to various operations. For example, the OSHA section of the workbook strongly encourages autobody shops to use the RIDOH Workplace Consultative Services Program and contains guidance on hazard communication, personal protective equipment, respiratory protection programs, lockout/tagout, and emergency planning. RIDEM has also developed a 77-slide pollution prevention PowerPoint slide show to complement the workbook, and is currently collaborating with Yale University's Office of Environmental Health and Safety on a short pollution prevention and occupational health autobody video. The RIDEM certification program incorporates the findings of several years of field research, including environmental/personal air monitoring and blood lead testing among workers. In conjunction with a leading vocational technical school, RIDEM will also be offering specialized laser guided spray painter training, aimed at reducing VOC emissions, to industry professionals.

The RIDEM Environmental Results Program is expected to be operational in late 2002. For more information, contact Ron Gagnon at (401) 222-4700.

For More Information

Contacts

EPA
www.epa.gov/permits

MA DEP:
www.state.ma.us/dep/erp

Tara Velazquez, ERP Manager
(617) 348-4040

MA DEP Sector Managers:

Paul Reilly, Dry Cleaners and Industrial Boilers:
(617) 556-1097

Melody Thomas Mordas, Photo Processors:
(617) 574-6837

Marc Cohen, Printers:
(617) 292-5837

Other Information Sources

Appendix A:
Sample Applicability Statement

Massachusetts Department of Environmental Protection

Environmental Results Program

2001 Facility Non-Applicability Statement

for Printers

Instructions:

Read section 1.1 of the Printers Environmental Certification Workbook. Complete this form **only** if you are not eligible. Fold this page into thirds exposing the side with DEP's address on the back of this page. Seal with tape and return this form to DEP if the Printer Self-Certification is not applicable to your facility. Please save a copy of this statement for your records.
If you have any questions, please call DEP's InfoLine at 617-338-2255 or 1-800-462-0444.

Facility Information

_____
Facility Name

_____   _____   _____
Facility Street Address   City/Town   Zip Code

_____   _____   _____
Phone Number   Fax Number   Federal Employer Identification (FEIN)

_____   _____
Contact Person   Title

This Facility is not eligible for the Printer ERP Self-Certification for the following reason(s):

☐ No offset lithographic, screen, flexographic, letterpress or gravure printing is done at this address. Our Standard Industrial Classification code is _____.

☐ This facility does only photoprocessing at this address.

☐ This facility is a major source of air pollution with actual emissions of more than 50 tons of volatile organic compounds (VOC's) per year or with actual emissions of more than 10 tons per year of a single hazardous air pollutant (HAP) or 25 tons per year of a combination of HAPS (see p. 56 of the Workbook for a list of HAPS).

☐ This facility is a manufacturer and does printing as an auxiliary component of its operations. Our Standard Industrial Classification (SIC) is _____.

Removal from this mailing list does not relieve you of your responsibility to comply with other environmental requirements.

_____   _____
Signature   Date

MADEP - ERP - PR
P.O.Box 120-165
Boston, MA 02112-0165

Appendix B:
Sample Self-Certification Forms

Massachusetts Department of Environmental Protection
Environmental Results Program
2001 Compliance Certification
for Printers

A *Facility Information*

Facility Name

Facility SIC Code

Facility ID #

Facility Street Address

City/Town

Zip Code

Phone #

Fax #

Federal Employer ID # (FEIN)

Contact Person Name

Title

Telephone

Please check box if this is a **New Facility** since last year's filing deadline of September 15, ☐

Please check box if this is a **Pre-Existing** Facility under **New Ownership** ☐

B *Compliance Information*

Answer all questions, unless you are directed to skip a question. Do <u>not</u> answer questions that you are directed to skip.

Hazardous Waste: Questions for all Printers

1. Over the past year did you have any spills or releases that required reporting to DEP? (See page 3, workbook section 1.5.)
   ☐ Yes - Submit a *Spill* or *Release* Report Summary
   ☐ No

2. Do you generate hazardous waste? (See pages 2 and 6, workbook sections 1.4, 3.1.1 and 3.1.2.)
   ☐ Yes
   ☐ No - **Skip to Question 16**

3. How much hazardous waste did you generate at your facility during the past 12 months?
   ____ Gallons

4. a. Indicate your facility's hazardous waste generator status for *hazardous waste* by placing a check next to the appropriate category. (See page 6, workbook section 3.1.3.)
   ☐ (VSQG) ☐ (SQG) ☐ (LQG)

   b. Indicate your facility's generator status *for waste oil* if applicable, by placing a check next to the appropriate category. (See page 7, workbook section 3.1.4.)
   ☐ (VSQG) ☐ (SQG)

5. What is your facility's hazardous waste identification number? (See page 7, workbook section 3.1.6.)
   _____

6. Do you have appropriate documentation which shows where hazardous waste is being shipped? (See page 10, workbook section 3.1.11.)
   ☐ Yes
   ☐ No - Submit a Return To Compliance (RTC) Plan

7. Are you shipping your hazardous waste offsite as frequently as required by workbook section 3.1.9? (See page 9.)
   ☐ Yes
   ☐ No - Submit a RTC Plan

8. Is all hazardous waste stored in either a separate, marked off hazardous waste storage areas AND/OR in a workstation accumulation area? (See figure 1 on page 9, workbook section 3.1.7.)
   ☐ Yes
   ☐ No - Submit a RTC Plan

9. Are all containers of hazardous waste in good condition? (See figure 1 on page 9, workbook section 3.1.7.)
   ☐ Yes
   ☐ No - Submit a RTC Plan

10. Are all containers of hazardous waste labeled as follows:

    a. As hazardous waste? (See page 8, workbook section 3.1.7.)
    ☐ Yes
    ☐ No - Submit a RTC Plan

b. With the name of the waste? (See page 8, workbook section 3.1.7.) ☐ Yes ☐ No - Submit a RTC Plan

c. With the hazard classification? (See page, 8, workbook section 3.1.7.) ☐ Yes ☐ No - Submit a RTC Plan

11. Are all containers of hazardous waste located on a crack-free surface? (See page 9, figure 1, workbook section 3.1.7.) ☐ Yes ☐ No - Submit a RTC Plan

12. Are used shop towels stored in closed containers? (See page 10, workbook section 3.1.10.) ☐ Yes ☐ No

---

Hazardous Waste: **Questions for SQG's and LQG's (see page 6 workbook section 3.1.3 for definitions of SQG and LQG. See your answer to Question #4 also.)** *If you are a VSQG, skip to Question #16.*

13. Do you have a telephone or other communication system in areas near where hazardous waste is stored or generated? (See page 11, workbook section 3.1.12.) ☐ Yes ☐ No - Submit a RTC Plan

14. Do you have a sign next to the telephone in each work area near where hazardous waste is stored or generated that tells what to do in an emergency? (See workbook section 3.1.12 and sample sign on page 42 of the workbook.) ☐ Yes ☐ No - Submit a RTC Plan

15. Do the hazardous waste containers in the storage area show the date accumulation began? (See page 9, figure 1, workbook section 3.1.7.) ☐ Yes ☐ No - Submit a RTC Plan

---

Industrial Wastewater: **Questions for All Printers**

16. Do you perform photo processing? (Note that if you use a direct to plate imaging system, answer no to 16.) ☐ Yes ☐ No – **Skip to Question 18 And do not answer questions 21-23**

16a. Do you ship/haul your untreated silver bearing waste off-site for recycling? ☐ Yes - **Skip to question 18** ☐ No

17. Do you have a silver recovery unit? ☐ Yes ☐ No - **Skip to Question 18**

  a. How many gallons of silver bearing wastewater did you treat through your silver recovery unit in the past year? (See workbook page 47.) ____ gallons/year
  b. Is your silver recovery unit directly connected to your photoprocessing wastestream? ☐ Yes ☐ No

18. Do you discharge or ship industrial wastewater to the MWRA? ☐ Yes ☐ No

---

Industrial Wastewater: **Questions for printers that discharge or ship industrial wastewater to a POTW outside of the MWRA service area**

19. Do you discharge or ship industrial wastewater to a POTW (Publicly Owned Treatment Works) *other than* the MWRA? ☐ Yes ☐ No - **Skip to Question 24**

20. Do you have a sewer discharge permit from your local POTW? (Contact your sewer authority to see if you are required to obtain a sewer permit.) ☐ Yes ☐ No - **Skip to Question 21**

  a. Are you in compliance with the terms of that permit? ☐ Yes – **Skip to Question 23** ☐ No - Submit a RTC Plan

Skip to Question 23

21. Are you in compliance with the 2 ppm silver discharge limit? (See page 15, workbook section 3.2.4.) ☐ Yes ☐ No - Submit a RTC Plan

22. Did you collect the sample within one month prior to changing the cartridge of your silver recovery system? (See page 16, workbook section 3.2.6.) ☐ Yes ☐ No - Submit a RTC Plan

23. Do you use a film processor cleaner containing a chromium compound? (See page 15, workbook section 3.2.4.) ☐ Yes – Submit a RTC Plan ☐ No

---

Industrial Wastewater: Questions for printers on septic systems

24. Are you on a septic system? ☐ Yes ☐ No - **Skip to Question 27**

25. Do you discharge industrial wastewater to the septic system? (See page 14, workbook section 3.2.2.) ☐ Yes - You must cease your discharge to the septic system **immediately** and submit a RTC Plan. ☐ No

26. Do you discharge industrial wastewater to the ground; or the surface water (i.e., storm drain, river, lake, or pond) without a permit? (See page 14, workbook section 3.2.1.) ☐ Yes - You must cease any unpermitted discharge **immediately** and Submit a RTC Plan. ☐ No

---

Industrial Wastewater: Questions for printers that store nonhazardous industrial wastewater

27. Do you store nonhazardous industrial wastewater in aboveground tanks or containers? ☐ Yes ☐ No - **Skip to Question 29**

28. Are you in compliance with the requirements for storing nonhazardous industrial wastewater in appropriate tanks or containers? (See page 17, workbook section 3.2.9.) ☐ Yes ☐ No - Submit a RTC Plan

---

Air: Questions for All Printers

29. How much press and/or screen cleaning solution did you purchase during the past 12 months? ____ Gallons

30. Indicate your facility's emission status for volatile organic compounds (VOCs) by placing a check next to your facility's category. (See page 19, workbook section 3.3.1; see also page 53 of the workbook for how to calculate VOC emissions.)

    ☐ Small

    ☐ Midsize

    ☐ Large - with ≤ 25 tons VOC emissions per year

    ☐ Large - with > 25 tons VOC emissions per year

31. If you are a large printer with ≤ 25 tons per year VOC emissions, please provide your yearly VOC and hazardous air pollutant (HAP) emission amounts. (See page 58 in workbook for a list of HAPs; see pages 52 and 53 of the workbook for how to calculate HAP and VOC emission amounts.)

    ____ tons VOC per year
    ____ tons HAP per year

    Note: Large Printers with >25 tons per year VOC emissions will separately be mailed an annual source registration form (BWP AQ-SR).

32. Complete the chart below.   **Note: See Page 38 of the workbook for process definitions**.

ALL PRINTERS COMPLETE THIS SECTION *(Indicate the number of presses at your facility*	Large Printers Only Type of Controls

If you have no presses of a specified type, write "0".)										(Check the type of controls you have)				
Conforming					**Nonconforming**									
Lithography	Screen	Gravure	Letter Press	Flexographic	Screen	Gravure	Letter Press	Flexographic	Heatset Lithography	Catalytic Oxidizer	Thermal Oxidizer	Carbon Adsorption	Condenser Filter	Other

---

Air: **Questions for small printers (See page 20, workbook section 3.3.1 for definition of small printer. See your answer to Question #30 also. If you are a midsize or large printer, skip to Question #36)**

33. Do you keep containers of cleanup solution covered when not in use? (See page 23, workbook section 3.3.3.) ☐ Yes ☐ No - Submit a RTC Plan

34. Are you using press/screen cleaning solution in compliance with standards in Table 1? (See page 21, workbook section 3.3.3.) ☐ Yes ☐ No - Submit a RTC Plan

35. Do you keep records in accordance with section 3.3.10? (See page 26 of the workbook.) ☐ Yes ☐ No - Submit a RTC Plan

---

Air: **Questions for printers with any press(es) currently covered by a DEP air permit**

Note: DEP recommends that you comply with ERP performance standards and eliminate existing permits as explained in section 5.1 of the workbook (see page 35). Most permits must be phased out by September 2001.

36. Are any of your presses covered by a DEP air quality permit? ☐ Yes ☐ No - If you are a small printer, **skip to Section C**, **page 7** of this form. If you are a midsize or large printer, **skip to question 42.**

37. Have you previously or are you currently self-converting any of those permits? (See page 35, scenarios 1 and 2, workbook section 5.0.) ☐ Yes - Indicate the number of presses covered by each permit by completing the sections below. Complete one section for each permit. ☐ No - **Skip to Question 39**

38. Write the # of presses covered by the permit in the box corresponding to each type of press. If no presses of a particular type are covered by the permit, write "0". See Sample question #38, on page 55 of the workbook, for an example.

	Permit Application # (A)	Lithography (B)	Screen (C)	Gravure (D)	Letterpress (E)	Flexographic (F)
1						
2						
3						
4						
5						

39. Do you hold any DEP air quality permits that you are not self-converting? (See pages 23 and 24, workbook sections 3.3.5 and 3.3.6; see also page 36, scenario 3, workbook section 5.0.) ☐ Yes - Complete the chart(s) below   ☐ No - If you are a small printer, **skip to Section C, page 7** of this form. If you are a midsize or large printer, **Skip to Question 42.**

40. Write the # of presses covered by the permit in the box corresponding to each type of press. If no presses of a particular type are covered by the permit, write "0". See Sample question #40, on page 55 of the workbook, for an example.

	Permit Application # (A)	Lithography (B)	Screen (C)	Gravure (D)	Letterpress (E)	Flexographic (F)
1						
2						
3						
4						
5						

41. Are you in compliance with the terms and conditions of the permit(s) that you are not self-converting? ☐ Yes   ☐ No - Submit a RTC Plan

STOP

If You Are A Small Printer - Skip to Section C, page 7 of this form.

Air: **Questions for midsize or large printers with any unpermitted or self-converted nonheatset presses, AND/OR any unpermitted or self-converted conforming screen or graphic arts operations.**

42. Do you have any unpermitted or self-converted nonheatset presses, AND/OR any unpermitted or self-converted conforming screen or graphic arts operations. (See page 34, workbook section 5.0 for definition of a "self-converted" operation, see page 23, workbook section 3.3.5 for a definition of a "conforming" screen or graphic arts operation.) ☐ Yes   ☐ No - **Skip to Question 46**

43. Are you using press/screen cleaning solution in compliance with Table 1 on page 21, workbook section 3.3.3? ☐ Yes   ☐ No - Submit a RTC Plan

44. Are you using inks, coatings, adhesives and fountain solution that meet applicable standards in Table 2 on page 22, workbook section 3.3.3? ☐ Yes   ☐ No - Submit a RTC Plan

45. Do you keep records in accordance with workbook section 3.3.10 on page 27? ☐ Yes   ☐ No - Submit a RTC Plan

Air: **Questions for midsize or large printers with any unpermitted or self-converted heatset presses, AND/OR any unpermitted or self-converted nonconforming screen or graphic arts operations.**

46. Do you have any unpermitted heatset presses or any unpermitted, nonconforming screen or graphic arts operations? (See page 23, workbook section 3.3.5 for definition of a "nonconforming operation".) ☐ Yes ☐ No

🛑 *If You Answered "No" to Question 46 - Skip to Section C, page 7 of this form.*

46a. Check here if your facility-wide VOC emissions are less than or equal to 10 tons per year. (See guidance on page 53 of the workbook for how to calculate facility-wide VOC emissions.) ____ Go to question 47.

46b. Check here if your facility-wide VOC emissions are greater than 10 tons per year. (See guidance on page 53 of the workbook for how to calculate facility-wide VOC emissions.) ____ Go to question 49.

47. Are you meeting applicable standards in Table 3 on page 24, workbook section 3.3.6 of the workbook? ☐ Yes ☐ No - Submit a RTC Plan

48. Do you keep records in accordance with "recordkeeping for heatset and nonconforming operations" on page 28, workbook, section 3.3.10? ☐ Yes ☐ No - Submit a RTC Plan

🛑 *You have completed the certification questions- Go to Section C, page 7 of this form.*

49. Do you have records to demonstrate that your facility-wide VOC emissions were less than or equal to 10 tons per year when you installed the unpermitted heatset/nonconforming press(es)? (See section 2.0 of the guidance on page 56 of the workbook.) ☐ Yes ☐ No - You must get a permit for any unpermitted non-conforming or heatset presses and submit a RTC Plan

50. Are you meeting applicable standards in Table 3 on page 24, workbook section 3.3.6? ☐ Yes ☐ No - Submit a RTC Plan

51. Do you keep records in accordance with "recordkeeping for heatset and nonconforming operations" on page 28, workbook, section 3.3.10? ☐ Yes ☐ No - Submit a RTC Plan

C   *Certification Statement*

Note: Complete all required Return to Compliance Plans (RTC) and Spill or Release Report Summary forms before signing this statement.

"I, _____, attest under the pains and penalties of perjury:

    I.   That I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this certification statement;

    II.   That, based on my inquiry of those individuals responsible for obtaining the information, the information contained in this submittal is, to the best of my knowledge, true, accurate and complete;

    III.   That systems to maintain compliance are in place at the facility and will be maintained for the coming year even if processes or operating procedures are changed over the course of the year; and

    IV.   That I am fully authorized to make this attestation on behalf of this facility.

I am aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information.

Signature: _____   Date: _____

Printed Name: _____   Title: _____

Source of Signatory Authority:

    If a Corporation: ☐ President   ☐ Secretary   ☐ Treasurer

        ☐ Vice President (If authorized by corporate vote.)

        ☐ Representative of the above (If authorized by corporate vote and if responsible for overall operation of the facility.)

    If a Partnership: ☐ General Partner

    If a Sole Proprietorship: ☐ Proprietor

Appendix C:
Sample Return-to-Compliance Plans
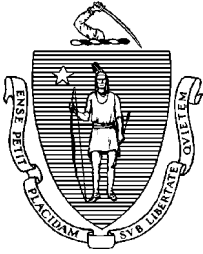
Massachusetts Department of Environmental Protection
Environmental Results Program

2001 Return to Compliance Plan
for Printers

✓✓ *Complete a separate Return to Compliance Plan for EACH compliance question answer that requires one.*

✓✓ *Only submit a Return to Compliance Plan for violations that you were unable to correct BEFORE certifying.*
Completing this form does not relieve the facility of its affirmative responsibility to operate in compliance with applicable regulations. Failure to operate in full compliance with the applicable regulations may result in enforcement actions which may include fines or penalties.

1. What is the Compliance Question number for which you are reporting noncompliance? _____

2. What is the specific violation (reference the workbook section # in which the requirement is explained and a description of the requirement)?
Workbook Number: _____

   Brief description of requirement:

   _____

   _____

   _____

3. What corrective action will you take to return to compliance?

   _____

   _____

   _____

4. Return to compliance date: _____
   (month/day/year)

   (Date you will be back in compliance after completing your corrective action)

Facility ID (or facility name and town) _____

Appendix D:
Compliance Assistance Workbooks

Acknowledgments

The Massachusetts Department of Environmental Protection wishes to acknowledge the following individuals who contributed to the development of this workbook. Many others have contributed to the overall development of the Environmental Results Program.

The
Environmental
Results Program

We at the Massachusetts Department of Environmental Protection have fundamentally redesigned environmental regulation to be less costly and more effective. We are replacing the 25 year-old system of prescriptive case-by-case permits with annual comprehensive compliance certification and industry-wide performance standards.

This new common sense approach to regulation is the Massachusetts Environmental Results Program, an innovative regulatory system that we believe holds great promise for making it easier to meet – and surpass – Massachusetts' environmental standards. This approach, which was modeled after the pilot Massachusetts Printers Partnership, in which you may have participated, gives your business the information and flexibility you need to do the job, while improving accountability to the public for environmental performance.

The Environmental Results Program streamlines existing pollution control requirements for your printing shop by replacing individual air quality, industrial wastewater and hazardous waste permits with industry-wide standards. You will no longer be required to obtain approval for a new press or process change <u>in advance</u> of putting it into operation. In exchange, your shop will submit an annual certification of its compliance with the standards.

The workbook provides you with the information you need to understand and meet your environmental obligations. The greatest benefit to you and the environment will come from <u>preventing</u> pollution, typically from product substitution and other tips which are described in the workbook. You will find that pollution prevention may significantly reduce your regulatory burden, and, at the same time, save you money.

A list of workshops on how to use the workbook and complete the Compliance Certification is enclosed. I urge you to attend one of these sessions.

Thank you for your cooperation with this new approach to protecting the environment

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Printers are part of the Massachusetts Department of Environmental Protection's (DEP) Environmental Results Program (ERP) designed to improve environmental protection at less cost to both government and business. ERP for printers eliminates most permits for approximately 3,000 Massachusetts printers by replacing them with a performance-based compliance certification. This workbook will explain what you will need to do in order to certify. If you have any questions, contact the DEP InfoLine 617-338-2255, or outside the
617 area code: 1-800-462-0444.

1.1 Who Is Subject to ERP for Printers?

ALL printers with printing operations with a <u>primary</u> Standard Industrial Classification (SIC) Code of 23, 26 or 27 or a <u>primary</u> North American Industry Classification System (NAICS) code of 323110, 323111, 323112, 323113 or 323119 are subject to the ERP standards. There are two exceptions.

You are a manufacturer or other business where printing is an ancillary operation.

You are a major source of air pollution (i.e., your facility has the potential to emit 50 tons per year of volatile organic compounds (VOCs) or 10 tons per year of any single Hazardous Air Pollutant (HAPs) or 25 tons per year for any combination of HAPs). In this case, you are required to have a Title V Air Operating Permit and you do not qualify for ERP at this time. However, if you comply with the ERP standards and recordkeeping requirements you can limit your potential to emit below these major source thresholds.

All printers, except those in these two categories, **<u>must comply</u>** with the standards in this workbook and complete the Self-Certification Form as instructed.

1.2 Pollution Prevention - First Step to Compliance.

The first step on the road to environmental compliance is to look for opportunities to use fewer hazardous materials and to generate less waste – stopping pollution at its source. Why manage wastes when you can eliminate them? Pollution Prevention (P2) techniques can help you reduce your compliance burdens, make your workplace cleaner and safer, increase your competitiveness and save you money.

This section outlines some easy first steps for you to take to prevent pollution. Then, after taking these steps and reducing your toxic use and waste generation as much as you can, move along in the workbook to find out how you must manage your remaining wastes, emissions and discharges to be in compliance with ERP. If you need help about Pollution Prevention, call the Office of Technical Assistance (OTA) (617) 727-3260 or your trade association for more information.

1.3 Pollution Prevention Techniques for All Printers.

The following is a list of general P2 techniques that all printers should already be implementing to manage their health and environmental issues in a responsible manner, to take advantage of

opportunities to reduce toxic use and waste generation, and to increase their competitive advantage.

ALL PRINTERS SHOULD

Make one person (or a person in each department) solely responsible for chemical purchases and inventory control. Decisions should be made on a basis of: product performance, environmental and safety requirements, and cost. Store chemicals in a central location.

Avoid purchasing similar chemical products from different suppliers. Conduct an inventory to reduce the number of chemical products used in your shop. Use multi-task products as much as possible.

Track chemical use and wastes to identify reduction opportunities.

Implement best management practices for the storage and handling of stock and materials. Spoilage and obsolescence of materials should be minimized. Use first-in, first-out management practices.

Examine your use of materials by process. Are there new technologies that can replace your existing process and reduce toxics or waste? You may be able to save money or provide a new customer service.

Clean containers as much as practical. Recycle the used containers or return them to the supplier or drum reconditioner.

Give employees simple incentives to keep their work areas clean and minimize chemical use. Promote good housekeeping.

Reduce your cleaning solvent usage by improving practices and solvent management. Avoid using flammable or F-listed solvents. (See page 39 for a list of F-listed solvents.) Cleaning solvents are a significant factor in VOC emissions and employee exposure.

1.4 Key Environmental Concepts

The standards contained in this workbook are designed to protect the environment from the following types of pollution.

Hazardous Waste

Hazardous waste is a chemical waste you intend to discard that is hazardous to public health and the environment when not handled properly.

For Printers, hazardous wastes include: press/screen cleaning solutions; untreated fixer; parts cleaning solvents; solvent-based inks, coatings or adhesives; and waste oil.

Industrial Wastewater Discharge

Industrial Wastewater is any wastewater resulting from any process of industry, manufacturing, trade or business, regardless of volume or pollutant content.

Discharge is the release of industrial wastewater to the waters of the Commonwealth through any source through pipes, sewers or other means.

For Printers, industrial wastewater include: film/plate processing wastewater; fountain solution; and water-based inks, coatings, or adhesives.

Air Emissions

Air Contaminant is any substance or man-made physical phenomenon in the open air space and includes: dust gas, fume, mist, odor, smoke, vapor, heat, sound, or any combination of these.

Volatile Organic Compound (VOC) is one type of air contaminant containing carbon and contributes to smog.

Air Emission is any discharge or release of an air contaminant to the open air space.

For Printers, air emissions originate from: press and screen cleaning solutions; inks; coatings; adhesives; alcohol; and alcohol-substitutes.

1.5 Releases or Spills Requiring DEP Notification

If you discover a spill of chemicals or hazardous waste, you may be required to notify DEP within two hours of discovery. Notification is required for environmental spills or releases (e.g., outside a building; on the ground; to a storm drain; or unlined trenches or sumps) in excess of reporting thresholds. A complete list of chemicals subject to the spill or release notification requirements and their reporting thresholds are provided in the state regulations (310 CMR 40.1600). If you have questions on the need to notify, please contact DEP at (617)-556-1133 or 1-888-304-1133.

Pollution Prevention (P2) - First Step to Compliance. P2 techniques can be used to help you reduce your printer size category and eliminate the need to comply with certain ERP requirements for VOCs and recordkeeping. For more information, call the DEP InfoLine at (617) 338-2255, the Office of Technical Assistance at (617) 727-3260 or your trade association.

Fix your fixer to meet the 2 ppm silver discharge. Save your silver. It's a recyclable precious metal. Silver recovery units and fixer and rinsewater recirculation systems reduce silver in the environment, conserve water, and can reduce your fixer purchases. You are required to <u>meet 2 ppm silver</u> when you haul or discharge photochemical wastes to a sewage treatment plant.

Say NO to septic systems. <u>You are not allowed to discharge any industrial wastewater to your septic system.</u> Sanitary discharges are OK. If you have a septic system, you are required to collect your industrial wastewater in containers and send it offsite to a licensed disposal facility or approved sewage treatment facility. For a list of licensed transporters, go to pages 43 - 45 at the back of this workbook.

Don't throw it in the trash. Hazardous wastes should never be handled like regular trash. Accumulate them in appropriate containers for proper disposal. Nonhazardous wastes, such as corrugated cardboard, aluminum plates and scrap film are recyclable. Call the Office of Technical Assistance at (617) 727-3260 or WasteCap (617) 236-7715. Go to page 62 for additional resources.

Don't use shop towels for waste disposal. You should reduce the inks and solvents on your shop towels as much as possible. Shop towels saturated with solvent or inks <u>must be handled as hazardous waste and cannot go to a commercial laundry</u>.

Avoid F-listed cleaning solvents, if you can. These solvents are regulated as hazardous waste when disposed. They are also more toxic than other commercially available solvents. Go to page 39 for a list of the F-listed solvents.

Hazardous waste management — to manage is to control. Nothing can get you into trouble faster than a disorganized waste storage area. Label drums and keep them clean and closed. Maintain aisle spaces, post warning signs, and keep hazardous wastes separated from nonhazardous wastes and virgin materials. Only store hazardous waste in your shop as long as necessary, and use only reputable, licensed waste management facilities.

Prevent trouble — Walk, Don't Run! You should have emergency response procedures in place to ensure employee safety. Post emergency phone numbers at each phone near the work areas where hazardous waste is generated. Designate an Emergency Coordinator and instruct employees on whom to contact, what to do and not do, and how to evacuate the building.

The air that we breathe. Volatile Organic Compounds (VOCs) in inks and solvents contribute to air pollution. Use environmentally friendly press cleaning solvents that evaporate more slowly. Use water-based, plastisol or UV inks, cleaning solutions, coatings, and adhesives whenever possible. Finally, use fountain solution substitutes instead of alcohol.

Records, records, records. You should keep your material purchase or usage records, hazardous waste manifests, MSDSs and other legally-required records on file. If you avoid using alcohol, and use water-based inks, coatings and adhesives, you gain the benefit of fewer recordkeeping requirements. An annual records review gives you an opportunity to find new ways to reduce

toxics and wastes, and track the true cost of doing business. Good records also facilitate DEP inspections and expedite business sales and loans.

3.1.1 How Do You Know It 's Hazardous?

As the generator, you are required to determine if a waste is hazardous or nonhazardous. You can do this by using your knowledge of the process and materials, by using available information like Material Safety Data Sheets (MSDSs), or by testing a representative waste sample. A licensed transporter can have your waste characterized for proper disposal. A list of transporters is provided in The Black Ink Room in the back of this work-book.

You should complete a Waste Profile Sheet, describing the waste, and keep it on file. If changes in your materials or printing operation cause the waste to change, then you are required to reevaluate it to ensure proper handling and disposal. Some transporters and disposal facilities may also require you to reevaluate your wastes each year.

3.1.2 Typical Printing Wastes and F-Listed Solvents.

Most hazardous wastes generated in the printing industry are ignitable, corrosive, or toxic. Some printers also use the "F- Solvents" in their inks or for press cleaning activities. Avoid using these solvents whenever possible because of their toxicity. Most solvents are considered Hazardous Air Pollutants. A full list of hazardous wastes and F-Solvents and their corresponding EPA Waste Codes are provided on page 39.

3.1.3 How Do I Determine my Generator Status?

First, you must determine how much hazardous waste you generate each calendar month. Use the example table to help you determine your monthly generation rate. In the example table, Green Printing Company generates approximately 42 gallons of hazardous waste each month. Some months, more or less hazardous waste may be generated.

The Green Printing Company should use the highest monthly generation rate. As a responsible business owner, you must manage your hazardous wastes in a safe and environmentally responsible manner. Federal and state regulations place the burden on you, as the generator, to properly dispose of the waste. You retain responsibility even when other companies handle and dispose of your wastes — this is your cradle-to-grave responsibility. By choosing products that are less hazardous, you may be able to avoid generating hazardous waste.

Example Hazardous Waste Inventory for Green Printing Company

	Activity	Waste	Hazardous?	Why?	Monthly Amount (gal)
Prepress	Untreated fixer	Yes	Toxic	> 5 ppm silver	15
Pressroom	Waste cleaning solvents	Yes	Ignitable	FP < 140°F	20
Pressroom	Waste nonheatset ink	No	Not toxic or ignitable	not counted	Not counted
Pressroom	Waste solvent ink	Yes	Ignitable	FP < 140°F	3
Pressroom	Waste specialty ink	Yes	Toxic	F-Solvent	2
Postpress	Waste solvent adhesive	Yes	Toxic	F-Solvent	2
			Total Hazardous Waste Generated (gal/month)		**42**

To determine your hazardous waste requirements, you must select a generator category. In our example, Green Printing Company is classified as a Small Quantity Generator of hazardous waste.

Hazardous Waste Generator Status

Large Quantity Generator (LQG)   generates more than 270 gal/month
Small Quantity Generator (SQG)   generates between 27 and 270 gal/month
Very Small Quantity Generator (VSQG)   generates less than 27 gal/month

3.1.4 I Also Generate Waste Oil. Should I Count It?

If you generate waste oil in Massachusetts, you will have a separate waste oil generator status. The same generator categories (LQG, SQG and VSQG) apply to waste oil generation. For example, if Green Printing Company also generates 10 gallons of waste press oil each month, it would be classified as a SQG of hazardous waste and a VSQG of waste oil.

3.1.5 What If I Change my Generator Status?

If your generator status changes for hazardous waste and/or waste oil, you must request a Change of Status Notification Form from the DEP Compliance Assistance Line (617-292-5898). Be advised that frequent changes in generator status are not permitted. Select the highest generator status, even if you are in a lower category some of the time.

3.1.6 Do I Need a Generator ID Number?

Regardless of your generator status, every generator must notify DEP and have a unique site-specific hazardous waste generator ID number for use on shipping papers. If you do not have an ID number, call the DEP's InfoLine at (617) 338-2255 or 1-800-462-0444 to obtain the appropriate form for a generator identification number.

3.1.7 How Should I Store Hazardous Waste?

You are required to clearly label all hazardous waste containers and comply with the general requirements below.

FOR ALL HAZARDOUS WASTES, YOU MUST

Label each container as "Hazardous Waste", the name of the waste (e.g. waste presswash), the hazard (ignitable, toxic, or corrosive).

Do not mix nonhazardous and hazardous wastes, because the resulting mix of waste is still regulated as hazardous.

Provide sufficient aisle space to inspect containers – preferably three feet or more. If your space is limited, stack drums on pallets, except for flammable wastes which cannot be stacked at all for fire safety reasons.

Keep containers closed, unless adding or removing wastes.

Store all ignitable and reactive wastes at least 50 feet from the property line, if possible.

YOU SHOULD ALSO KNOW

Containers of flammable (flash point less than 100^OF) solvents and hazardous wastes should be electrically grounded when materials are dispensed or added according to federal OSHA, the Massachusetts State Fire Marshal, and local building codes.

Outside storage of chemicals and wastes is not recommended; additional hazardous waste storage requirements apply and you may need to get a federal storm water discharge permit. For assistance, call the DEP InfoLine (617) 338-2255 or 1-800-462-0444.

The state plumbing code has requirements regarding the location of floor drains in proximity to hazardous material and waste storage. Check with a licensed plumber on whether floor drains must be sealed or relocated.

You can store hazardous waste in two ways: 1) in a designated hazardous waste storage area and/or 2) at workstations where hazardous waste is generated. See Figure 1 for how to store wastes in these locations.

3.1.8 What if I Carry My Untreated Fixer in Containers to My Silver Recovery Unit?

If you have a silver recovery unit (SRU) that is <u>not</u> directly connected to your processor, the containers of untreated fixer, bleach fix or stabilizer containing silver you carry to the SRU are regulated as hazardous waste. The containers must be stored according to the requirements in Figure 1 above. However, you do not have to count these wastes towards your generator status.

3.1.9 How Often Must I Ship my Hazardous Waste?

You are required to ship hazardous waste according to the generator accumulation limits below. The time period starts from the date placed on the drum or tank known as the accumulation date. Waste quantity limits at any one time are in parentheses.

Generator Accumulation Limits

Large Quantity Generator (LQG)   90 days from date on drum or tank(no quantity limit)

Small Quantity Generator (SQG)	180 days from date on drum or tank (1,650 gals in tanks or 550 gals in drums)
Very Small Quantity Generator (VSQG)	No time period limit (165 gals)

3.1.10 How Must I Handle my Soiled Shop Towels?

There are two types of cleaning towels used by printers:

- Disposable wipes that are shipped offsite as nonhazardous solid waste or hazardous waste.

- Reusable shop towels that are returned to a commercial laundry.

Nonhazardous wipes can be disposed as solid waste. You are required to show that the wipes are nonhazardous– they do not contain any excess solvent or ink using the Paint Filter Test and are not ignitable, corrosive or contain toxic metals. If they are determined to be hazardous, then they must be shipped as hazardous waste by a licensed transporter.

You cannot send reusable shop towels to a commercial laundry with excess solvent or ink. If they are saturated, they are a hazardous waste.

To remove excess solvent, shop towels or wipes can be wrung out by hand or other mechanical compaction method, using proper personal protective equipment and procedures for combustible liquids. *(It is not recommended that flammable solvents be recovered from towels or wipes without explosion-proof equipment.)* Hand-wringing or mechanical compaction may be repeated until the towel passes the one-drop test. A rule of thumb regarding the one-drop test is to fold the towel in quarters; if you get solvent or ink on your hands after squeezing it, it is still saturated. *(Solvent removed from towels or wipers should be collected for recycling or offsite disposal.)* Air drying is not allowed, because it releases pollutants into the workplace and the environment.

Don't use shop towels for waste disposal. Also, store them in closed containers. Train employees to properly dispose of ink and solvent in other designated containers. You should also train press operators not to use reusable shop towels to line ink trays. Scrape excess ink off press parts and ink fountains before cleaning with shop towels.

3.1.11 How Do I Ship Hazardous Waste?

You will need a licensed hazardous waste transporter to remove your hazardous waste and waste oil. Your transporter will provide you with a manifest for each waste shipment, which may be preprinted, except for your signature. Check the manifest for accuracy (your ID number, type and quantity of waste). At shipment, you must sign it and keep Copy 8. Copies 6 and 7 must be mailed to the DEP and the state receiving the waste (if Massachusetts, then to DEP also). Some transporters will mail Copies 6 and 7 for you, in which case, you will only get Copy 8 at the time of waste shipment. The facility receiving your hazardous waste will send you a signed Copy 3 of the manifest within 45 days. (If not, contact the DEP Hazardous Waste Compliance Assistance Line at (617) 292-5898 for guidance.) Staple Copies 3 and 8 together and place in a file.

SQGs and LQGs must also sign and keep a copy of the Landfill Disposal Restriction Form (a form for hazardous waste landfill disposal provided by the transporter). This is optional for VSQGs with transporter contracts for regular offsite waste shipments. This form should be stapled to Copies 3 and 8.

VSQGs may transport up to 55 gallons of their own waste to an-other hazardous waste generator without a manifest. A receipt for the waste must be kept on file.

3.1.12 Emergency Response for SQGs and LQGs.

Designate an Emergency Coordinator. Should an emergency situation arise, the Emergency Coordinator must be prepared to react quickly and protect employees, emergency response personnel and the environment.

Have a telephone or communication system near areas where hazardous waste is stored or generated to alert employees in an emergency. Post the emergency phone numbers and name of the Emergency Coordinator next to the telephone. See page 42 for sample emergency information sign.

Post evacuation route maps and exit signs in areas where hazardous wastes are handled or stored.

Have portable fire extinguishers and/or water supply for fires. Ensure adequate water pressure for the sprinklers. *(Adequate water pressure can be determined during the annual sprinkler test required by OSHA and local fire departments.)*

Make arrangements for emergency response with local responders (fire, police, etc.). If you ca**n**'t, document your efforts that they elected not to respond to your request or refused to provide response services. To reduce the risk of fire, explosion, or spill of hazardous waste, SQGs and LQGs are required to have the following:

3.1.13 Summary of Generator Requirements.

The requirements are summarized in a table for VSQGs and SQGs found on page 40.

ALL GENERATORS MUST

Determine whether your wastes are hazardous or nonhazardous.

Determine your hazardous waste and waste oil generator status.

VERY SMALL QUANTITY GENERATORS MUST

Do all of the above requirements. AND

Store no more than 150-165 gallons (~3 drums) of waste at any time.

Use a licensed transporter to ship your hazardous waste and waste oil.

Only VSQGs may self-transport up to 55 gallons of hazardous waste to another generator.

Obtain your site-specific generator ID number.

Store your hazardous waste in accordance with Section 3.1.7. Be sure to label your waste containers properly.

Remove excess solvent from shop towels before shipping to a commercial laundry.

Segregate shop towel containers from other containers used for the disposal of inks and solvents. Do not use shop towel containers for waste disposal.

Keep a record of where your hazardous waste is shipped. Keep the manifests and receipts on file for at least three years. Landfill Disposal Restriction forms must be kept for five years. It is recommended that these documents be kept indefinitely.

SMALL QUANTITY GENERATORS MUST

Do all of the above requirements. AND

Store no more than 1,500-1,650 gallons of hazardous waste in tanks or 550 gallons in containers (~10 drums) at any time.

Maintain a hazardous waste storage area according to Figure 1. Workstation Accumulation Areas are optional.

Date containers in hazardous waste storage area as soon as filling begins. Conduct weekly inspections of hazardous waste storage areas. *(It is preferable to maintain a log of the inspections.)*

Ship hazardous waste and waste oil offsite within 180 days of the accumulation date on the tank or container.

Prepare for emergencies in accordance with Section 3.1.12.

LARGE QUANTITY GENERATORS MUST

Do all of the above requirements. AND

Ship hazardous waste and waste oil offsite within 90 days of the accumulation date on the tank or container. There is no limit on the quantity of hazardous waste stored at any time.

Prepare a written Hazardous Waste Training Plan and Contingency Plan. Annual employee training is required. The Contingency Plan must be sent to local responders (fire, police, and hospital). Call the DEP Hazardous Waste Compliance Assistance Line at (617) -292-5898 for guidance on what topics should be covered in the plans.

Submit a Hazardous Waste Generator Report every even numbered year.

Your shop may generate industrial wastewater from several sources including: film and plate processing; spent fountain solution; and water-based inks, coatings, adhesives and cleaning solutions. The ERP standards for wastewater generated from printing operations target silver-bearing wastewater and
dichromate cleaners. Your requirements depend on whether you are on a septic system or discharge to a sewer system.

3.2.1 What Can 't I Do?

You are NOT ALLOWED to discharge any liquid industrial waste to a surface water body (e.g. streams, lakes, rivers), groundwater, or directly on the ground, without an industrial wastewater discharge permit from DEP and EPA. Call the DEP Infoline for guidance at (617) 338-2255 or 1-800-462-0444.

3.2.2 What If I am on a Septic System?

You cannot discharge any liquid industrial waste to a septic system. You can discharge sanitary wastewater to an onsite septic system. You are required to ship offsite your photo-processing wastewater, waste fountain solution, process cleaning solutions and any other wastestreams from your prepress, press and postpress operations. If the industrial wastewater is not regulated as hazardous, you may be able to use a septage hauler.

You must comply with the requirements for wastewater storage in tanks or containers and offsite shipment of wastes. See pages 17 and 18 for specific requirements. If you have a silver recovery unit, you must maintain a record of the volume of silver-bearing wastewater treated by the silver recovery unit(s) for three years. See page 46 for worksheet.

3.2.3 Do I Need To Post Any Signs?

DEP recommends that you post a warning sign at every sink in the prepress, press, and postpress areas. Sample warning signs are provided on pages 48 and 49. One is used for shops on septic systems and the other sign is used for shops on sewers. Copy the signs as many times as needed. Place the sign in a sheet protector and post above the sink to remind employees not to dispose of process chemicals, solvents, waste inks, and hazardous wastes down the sink.

3.2.4 What Are My Requirements For Sewer Discharge?

You may discharge silver-bearing photoprocessing wastes to the sewer as long as they do not exceed the state-wide 2 ppm discharge limit for silver. However, if you have a wastewater discharge permit from your local sewer authority with a lower silver limit, you must meet the lower limit in your permit. See page 50 for a list of wastewater treatment plants.

YOU ARE NOT ALLOWED TO

Discharge or ship silver-bearing wastewater to a sewer treatment plant, if it exceeds 2 ppm silver.

Discharge or ship wastewater to a sewer treatment plant (solvents, solids, viscous materials, oxygen demanding pollutants, heated process water, etc.) that may cause a fire

hazard or interfere with the local sewer treatment plant operations. Contact your local sewer authority for guidance.

Discharge wastes with a pH of less than 5.5 or greater than 9.5.

Discharge dichromate (chromic acid) film processor cleaners after May 1, 1999.

Discharge hazardous waste to the sewer.

3.2.5 I Discharge to the Sewer. What Type of Silver Recovery Unit (SRU) Should I Use?

Photoprocessing wastewater can be discharged to the sewer if it is pretreated to remove silver and meet the statewide limit of 2 ppm or any other local permit limit. Silver-bearing wastes include fixer and bleach-fix stabilizers. Film developer, rinsewater, and bleach are not considered silver-bearing wastes, unless contaminated with more than 2 ppm silver.

If you have a SRU, it must be of adequate design and capacity for your volume of silver-bearing wastewater treated. SRUs must be operated, serviced and maintained according to the manufacturer's specifications.

The most common SRUs are electrolytic, steel wool cartridges and ion exchange units. See Figure 2 for a typical SRU. They may be used separately or in combination, but an electrolytic SRU alone is not sufficient.

You do not need to be a certified operator for most SRUs (i.e., electrolytic or steel wool cartridges), lime chip neutralization or oil/water separators. *(It is recommended that employees responsible for the operation of the other types of SRUs be trained by the manufacturer or supplier. Your local sewer authority may require you to document this training.)*

3.2.6 How Do I Sample For Silver?

For all SRUs, a representative sample of all photoprocessing wastes (that is, fixer, developer, and rinsewater) must be taken at least once a year at a location after the photoprocessing wastewater has gone through silver recovery and prior to combining with any other waste streams, including sanitary discharge. The sample must be taken within one month prior to changing the cartridges and analyzed by a state-certified laboratory, or you may take it with a commercially available self-sampling container, if it is analyzed by a certified laboratory.

If you have SRUs that use treatment technologies other than electrolytic and/or steel wool cartridges, then you must test the SRUs monthly. Call the DEP InfoLine for guidance.

Figure 3 with explanatory note shows you where to collect a representative sample depending on accessibility to processor drain lines or the floor/sink drains.

Figure 3 graphic.

3.2.7 What Happens If I Exceed The 2 ppm Silver Limit?

You are required to determine the cause and make whatever repairs, equipment changes, or operation changes to ensure compliance with the 2 ppm limit. If the SRU is not operating properly, do not discharge to the sewer. You may have to:

Check your SRU(s) to ensure effective recovery of silver. Has the electrolytic unit been cleaned? Are the cartridges out of date? Has the volume of spent fixer exceeded the capacity of the SRU(s)?

Check the processor. Are the squeegees properly adjusted? Did you change your photochemistry and not readjust the operating conditions?

Add additional SRU capacity?

Is the developer or rinsewater getting contaminated with fixer carryover? Can the processor be cleaned or adjusted? Do you need cartridges for the developer or rinsewater as well?

3.2.8 What Records Must I Maintain?

You Must

Maintain a log(s) when each SRU is put into service, cleaned and serviced, including the change out dates for the spent cartridges. Date all cartridges when installed. See page 46 for sample log.

Record the SRU sampling dates and results.

Record the total amount of wastewater discharged and the total amount of wastewater treated by the SRU during the past 12 months.

Keep your SRU records and laboratory tests at least three years.

Keep MSDSs demonstrating that you are not using dichromate (chromic acid) processor cleaners after May 1, 1999.

3.2.9 Can I Store Nonhazardous Wastewater in a Holding Tank or Drums?

You can store wastewater in tanks, drums or containers. If the wastewater is a hazardous waste (i.e., contains > 5 ppm silver), it must be stored according to the hazardous waste requirements on pages 8 and 9. If it is nonhazardous:

For Drums & Containers, You Must

Use containers that are approved by the USDOT for offsite shipment. *(Such containers (greater than 5 gallons capacity only) are stamped or printed with the UN symbol and a 18–22 character alphanumeric code.)*

Label the container indicating the contents are nonhazardous.

Store the containers in a secure area with an impervious floor to contain leaks and spills.

Prevent spillage during filling, emptying or transporting the containers. If there are any spill releases to the environment, report them to the local Board of Health within 24 hours.

Keep records for three years on the volume shipped, the transporter name and address, dates of shipment and the destination(s).

For Tanks, You Must

Have a tank constructed of a material that is compatible with the wastewater contents.

Locate the tank(s) in a secured area with an impervious floor to contain leaks and spills.

Have a secondary containment structure capable of retaining 110% of the total volume of all aboveground tanks.

Have odor control.

Label the tank indicating the contents are nonhazardous.

If tanks are remotely or automatically filled, they must have a bell and light alarm. The alarm must activate when the level reaches 75% of the tank capacity and be transmitted to a staffed location. Manually filled tanks must be provided with visual or sight glass level measurement.

3.2.10 Can I Use an Evaporator to Reduce My Wastewater Volume?

You can use an evaporator to reduce the volume of nonhazardous wastewater before shipping offsite. A separate permit is <u>NOT REQUIRED</u>. If you reduce the volume of hazardous wastewater in an evaporator, a separate DEP permit <u>IS REQUIRED</u>.

The evaporator sludge must be tested to determine if it is a hazardous waste that requires proper offsite shipment. Regardless, the test results should be kept on file.

3.2.11 How Can I Ship Wastewater Offsite?

If your wastewater is hazardous, you must use a licensed transporter. See page 43 for a list of transporters. A precious metals transporter can transport silver-bearing wastewater and sometimes nonhazardous wastewater (developer and rinsewater). If the wastewater is nonhazardous, a septage hauler may take it to a sewer treatment plant (as long as you have written approval from the local sewer authority or treatment plant).

Volatile Organic Compounds, or VOCs, are chemicals that have been determined by the USEPA and DEP to cause air pollution and a public health impact. They contribute to the formation of ozone, a component of smog.

Where do VOCs come from? In printing, VOCs primarily originate from the printing inks, fountain solution additives (alcohols, etc.), platemaking (if solvent-based), press cleaning solvents and coatings. Solvent-containing solutions and coatings, alcohol and inks can evaporate during a pressrun or press cleanup. Press and screen cleaning solvents are specifically formulated to clean and then quickly evaporate, leaving a dry blanket or screen. In contrast, nonheatset, water-based, plastisol and UV-cured inks are formulated to provide maximum absorption or polymerization on the paper, so very little ink solvent evaporates.

3.3.1 What is my Facility Emissions Status for VOCs?

You are required to determine your facility emissions status for VOCs – similar to determining your hazardous waste generator status. You facility emissions status will determine what performance standards and recordkeeping requirements apply to your shop. To make your determination, you need to add up the amount that purchased or used of:

Press and/or screen cleaning solutions.

Alcohol.

Inks, coatings, and adhesives (See important Note below for exceptions.)

Important Note

DO NOT include: incidental materials; inks used in nonheatset offset lithographic printing; any inks/coatings/adhesives of less than or equal to 10% by weight VOC as applied; plastisol inks; or ultraviolet inks.

DEFINITIONS

> **Incidental Materials means VOC-containing materials that do not meet the performance standards (see Section 3.3.3) <u>AND</u> do not exceed 55 gallons in total quantity per rolling 12 month period.**

> **Nonheatset Offset Lithographic Printing means offset lithographic printing in which the ink dries by oxidation and absorption into the substrate without heat from dryers or ovens.**

> **Alcohol means ethanol, n-propanol and isopropanol used in fountain solutions.**

> **Water-based Inks, Coatings and Adhesives have less than or equal to 10% by weight of VOC content <u>as applied</u>.**

> **Plastisol Inks are dispersions of finely divided resin in a plasticizer.**

Ultraviolet Inks are inks that dry by polymerization reaction induced by ultraviolet energy.

Rolling 12 Month Period means the last consecutive 12 month period of time.

Your facility VOC emissions status is based on a rolling 12 month period (see definition above.) Once you have collected the purchase or usage records for these products for the last 12 months, you can use the categories shown below to determine your facility emissions status. Refer to the Important Note on page 19 for materials excluded from the status determination.

Facility VOC Emissions Status

Small Printer	**Purchased or used less than or equal to 275 gallons of cleanup solution, ink, adhesive and/or coating, and used less than or equal to 55 gallons of alcohol per rolling 12 month period.**
Midsize Printer	**Purchased or used between 275 and 3,000 gallons of cleanup solution, ink, adhesive and/or coating, and/or used more than 55 gallons of alcohol per rolling 12 month period.**
Large Printer	**Purchased or used more than 3,000 gallons of cleanup solution, ink, adhesive and/or coating per rolling 12 month period.**

3.3.2 What Are My Air Emission Requirements?

The air emission requirements can be divided into performance standards and recordkeeping requirements.

The performance standards are specific to each of four categories of printing: 1) nonheatset offset lithographic printing; 2) graphics arts printing (gravure, letterpress and flexography); 3) screen printing; and 4) printers with heatset presses or nonconforming operations. You are required to evaluate your operations and then determine what categories apply to your shop. If you have printing operations that fall into two or more categories, the performance standards apply to those corresponding operations. For example, if you are a Midsize Printer with a nonheatset web and flexographic presses, the standards for both nonheatset offset lithographic printing <u>and</u> flexography would apply to your shop.

3.3.3 What Are the Performance Standards?

The performance standards are limits placed on the VOC content of the products you use – inks, press and screen cleaning solutions, fountain solution, coatings and adhesives. Table 1 summarizes the performance standards for press and screen cleaning solutions and applies to <u>ALL PRINTERS</u>. Table 2 applies only to Midsize and Large Printers.

Table 1 Performance Standards for Printers

Vapor pressure is measured in millimeters of mercury (mm Hg).

	Nonheatset Offset Lithography	Graphic Arts Gravure Letterpress Flexography	Screen Printing
Press or Screen Cleanup Solution	30% VOC or • 10 mm Hg vapor pressure	• 25 mm Hg vapor pressure	• 5 mm Hg vapor pressure

Symbols

< means less than
> means more than

•means less than or equal to
•means more than or equal to

Table 2 More Performance Standards for Midsize and Large Printers

Values in VOC content as applied, not including water.

	Nonheatset Offset Lithography	Graphic Arts Gravure Letterpress Flexography	Screen Printing
Printing Ink	Not Applicable	300 g VOC/L (2.5 lbs VOC/gal)	400 g VOC/L (3.3 lbs VOC/gal)
Metallic Inks	Not Applicable	Not Applicable	400 g VOC/L (3.3 lbs VOC/gal)
Conductive Inks	Not Applicable	Not Applicable	850 g VOC/L (7.1 lbs VOC/gal)
Extreme Performance Inks/Coatings	Not Applicable	300 g VOC/L (2.5 lbs VOC/gal)	800 g VOC/L (6.7 lbs VOC/gal)
Coatings	Not Applicable	150 g VOC/L (1.25 lbs VOC/gal)	400 g VOC/L (3.3 lbs VOC/gal)
Adhesives for postpress use	300 g VOC/L (2.5 lbs VOC/gal)	150 g VOC/L (1.25 lbs VOC/gal)	400 g VOC/L (3.3 lbs VOC/gal)
Fountain Solution	Webfed Presses no alcohol Sheetfed Presses • 5% VOC unrefrigerated • 8% VOC refrigerated	Not Applicable	Not Applicable

NOTE: The sheetfed press performance standard for fountain solutions applies to only solutions <u>with alcohol</u>. Refrigerated means a constant temperature below 60°F. The standards do not apply to sheetfed or web presses with reservoirs having a capacity of less than one gallon of fountain solution.

IMPORTANT NOTE

The VOC content of your inks, cleanup solutions, fountain solution, coatings, and adhesives must be determined using EPA's Method 24, Method 24A (gravure inks only) or other calculation approved by DEP. If the product MSDS does not state the VOC content (or Percent VOC or Percent Volatility) determined by these methods, you should contact your supplier for the information. If the supplier cannot provide the VOC content by Method 24 or 24A, you should consider changing suppliers or contact DEP Infoline for guidance on alternative methods.

Printers Must Also Do

> **Keep containers of press cleanup solutions closed at all times, except during dispensing or filling.**

> **Keep shop towels soiled with inks and cleanup solutions in closed containers, when not in use.**

> **Cover fountain solution mixing and storage tanks, except when adding or draining solution.**

> ### 3.3.4 What If I Use Press Cleaning Solutions or Fountain Solutions in my Nonheatset Operations That Do Not Meet the Performance Standards?

If you are a Small Printer, then a separate permit for nonconforming operations is <u>NOT REQUIRED</u>. A Small Printer is still required to meet the performance standards for cleanup solutions.

DEFINITIONS

> **Conforming operation means an operation that uses raw materials that meet applicable performance standards in Section 3.3.3, Tables 1 and 2.**

> **Nonconforming operation means an operation that uses one or more inks, coatings or adhesives that <u>DO NOT</u> meet the performance standards in Section 3.3.3, Table 2.**

> **Year means the last consecutive 12 month period.**

If you are a Midsize or Large Printer, and you cannot meet one or more screen or graphic arts performance standards for inks, coatings or adhesives, you may be required to obtain a permit from DEP for those nonconforming printing operations.

If your total actual facility emissions are • 10 tons VOC/year, then a separate permit for nonconforming operations is <u>NOT REQUIRED</u>. Refer to page 56 for how to calculate your total actual facility emissions. However, you must meet the performance standards in Section 3.3.6, Table 3 and the recordkeeping requirements on page 28.

If your total actual facility emissions are > 10 tons VOC/year, then a separate permit <u>IS REQUIRED</u>. If you have two or more unpermitted presses that were installed at different times, you may not need a permit for the older presses. See page 56 for more guidance.

Regardless of your total actual facility emissions, you must be able to document that it is technically or economically infeasible to meet the performance standards and keep this analysis on file. (Technical infeasibility means your substrate or end product requires higher VOC content materials than allowed by the performance standard.) If your emissions are > 10 tons VOC/year, you must perform this analysis before initiating the permit process. If, during the permit application process, DEP determines that the nonconforming operations can be converted to meet the performance standards after all, then you will be required to do so. You will still be responsible for any permit application and DEP review fees, regardless of outcome.

Refer to Section 5.0, pages 35 and 36 for additional information on existing permits. If you need additional guidance on this issue, call the DEP InfoLine at (617) 338-2255.

3.3.6 What if I Have Unpermitted Heatset Presses?

If you are a Small Printer, then a separate permit for nonconforming operations is <u>NOT REQUIRED</u>. A Small Printer is still required to meet the performance standards for cleanup solutions.

If your total actual facility emissions are • 10 tons VOC/year , then a separate permit for your heatset presses is <u>NOT REQUIRED</u>. (Refer to page 56 for how to calculate your total actual facility emissions.) You must still comply with the performance standards in Table 3 and the recordkeeping records on page 28.

Table 3: Performance Standards for Midsize and Large Printers with Unpermitted Heatset Presses or Nonconforming Screen or Graphic Arts Operations

	Heatset Offset Lithography	Graphic Arts Gravure Letterpress Flexography	Screen Printing
Press or Screen Cleanup Solution	30% VOC or • 10 mm Hg vapor pressure	• 25 mm Hg vapor pressure	• 5 mm Hg vapor pressure
Fountain Solution	Webfed Presses No Alcohol	Not Applicable	Not Applicable

Vapor pressure is measured in millimeters of mercury (mm Hg).

If your total actual facility emissions are > 10 tons VOC/year, then a separate permit is <u>REQUIRED</u>. You must continue to comply with your existing permit (or obtain a permit, if you do not have one already). If you have two or more unpermitted presses that were installed at different times, you may not need a permit for the older presses. See page 56 for more guidance on this issue

Refer to Section 5.0, pages 35 and 36, for additional information on existing permits.

3.3.7 What If I Have Permitted Heatset Presses or Nonconforming Operations?

DEP strongly recommends that all lithographic printers run alcohol-free. Alcohol is a VOC that contributes to smog. There are many alcohol-free fountain solutions available and you should contact your supplier to see if you can run alcohol-free.

A Small Printer does not have to meet performance standards for fountain solution.

Midsize and Large Printers <u>MUST</u> use alcohol-free fountain solution for webfed presses, and must keep the MSDS for the fountain solution to demonstrate that it is alcohol-free.

As a Midsize or Large Printer, you may elect to use alcohol, alone or in combination with alcohol substitutes, in your fountain solution for sheetfed presses. Sheetfed fountain solutions containing alcohol must not contain <u>more than 5% VOC by weight for unrefrigerated solutions or 8% VOC by weight for refrigerated solutions.</u>

You are required to demonstrate compliance with the 5% or 8% limits at all times, except when you elect to use weekly averaging. Weekly averaging to meet the 5% and 8% limits is only allowed at an individual press that occasionally requires higher alcohol content in the fountain solution.

If you elect to use this weekly averaging method at an individual press, you must use the following formula:

$$VOC_W = \frac{W_1VOC + W_2VOC + W_3VOC}{W_T}$$

Where:

VOC_W	=	Weight percent of VOCs (must be less than the 5% or 8% limits)
W_1VOC	=	Weight of VOCs in concentrate per week
W_2VOC	=	Weight of VOCs in additive per week
W_3VOC	=	Weight of VOCs added per week (usually alcohol, if any)
W_T	=	Total weight of fountain solution per week (includes water, concentrate & additives)

3.3.9 What Are Hazardous Air Pollutants?

Hazardous Air Pollutants (HAPs) are VOCs, toxic metal compounds or other chemicals that are considered hazardous to the environment and public health. HAPs are more strictly regulated by the EPA and DEP. See page 58 for the list of HAPs.

Most Small and Midsize Printers do not use products that contain HAPs in significant quantities. If you have HAP-containing products in significant quantities then you must determine whether you use 10 tons/year of any individual HAP or 25 tons/year of any combination of HAPs. This can be done using the HAP Workheets on pages 52 and 53. If you exceed either limit, contact your nearest regional DEP office regarding special requirements applicable to major HAP users.

Large Printers are required to maintain records on HAP usage.

3.3.10 What Are My Recordkeeping Requirements?

All Printers Must

Keep all records onsite for at least three years and have them readily available for a DEP inspection.

Small Printers Must

Keep monthly purchase or usage records sufficient to demonstrate that you are a Small Printer. This includes inks, cleanup solutions, alcohol, coatings, adhesives. To show that you do not exceed the 55 gallon limit for incidental materials, keep purchase records for those materials on file. Purchase records are <u>not</u> required for inks/coatings/adhesives having • 10% VOC content by weight as applied, ultraviolet inks, plastisol inks and nonheatset offset lithographic inks.

Keep product Material Safety Data Sheets (MSDSs) on file for inks, coatings and adhesives having • 10 % VOC content by weight as applied, and for cleanup solutions. *(OSHA requires you to keep MSDSs for all of your products. If the MSDSs do not have the VOC content by Method 24 or the vapor pressure in mmHg, you must keep other records with this information. Call DEP for guidance on alternative methods to calculate the VOC content and vapor pressure.)*

Midsize Printers

Meet all of the above requirements to demonstrate that you are a Midsize Printer, AND

Keep records of the % VOC content by weight for sheetfed alcohol-containing fountain solutions as measured each time alcohol (or alcohol mix) is used, based on the proportions of ingredients mixed, MSDSs, and/or supporting test data.

Keep a log of daily temperatures for sheetfed fountain solutions containing alcohol, when the VOC content is • 5%.

Keep MSDSs for all fountain solutions (including alcohol-free solutions), inks, coatings and adhesives.

Keep records of any additives, thinners, etc. used in ink, coatings and adhesives to demonstrate compliance with the performance standards. *(Remember -- The performance standards for inks, coatings and adhesives are <u>as applied</u> on the press.)*

Keep any supporting calculations and spreadsheets for determining the calendar week average VOC content for alcohol-containing fountain solutions. See page 52 for sample worksheet.

Large Printers Must

Meet all of the above requirements to demonstrate that you are a Large Printer, AND

Keep records of your actual facility emissions of all VOCs and each HAP-containing compound per calendar month. See page 53 for sample worksheet. *(For nonheatset lithographic inks, you can assume that only 5% of the inks' VOCs are emitted to the air. For heatset lithographic inks, assume that 80% of the inks' VOCs are emitted to the air. For all other inks, you <u>must</u> assume 100% of the inks' VOCs are emitted to the air.)*

Recordkeeping For Self-Converted or Unpermitted Heatset and Nonconforming Operations

Keep records to demonstrate that your facility has • 10 tons VOC/year actual facility emissions.

Keep records required for Large Printers.

IMPORTANT NOTE

Recordkeeping for unpermitted or self-converted heatset and nonconforming operations only applies to shops with actual facility emissions of • 10 tons VOC/year per rolling 12 month period. (For more information on unpermitted presses and self-converting permits see Section 5.0 pages 34-36. All other heatset press and nonconforming operations must comply with any separate permit recordkeeping requirements.

Section 4.0
Pollution Prevention
in the Printing Industry

Take this opportunity to look specifically at P2 techniques that are applicable to your shop area – prepress, pressroom and postpress – and to the type of printing you do. Review the techniques appropriate to your operation and use them to determine how well your existing environmental management practices compare to the best management practices (BMPs) in common use in other print shops like yours.

Each category begins with a list of techniques which are low cost, common sense, best management practices that every printer in the category should already be implementing. Then P2 techniques are listed in each category that require increasing amounts of capital or employee training to implement. These techniques, while more challenging to implement, have been used by printers to lower costs of compliance and increase their competitive advantage. They may be cost-effective strategies for you to consider, if you have not already. To determine which level of P2 investment is right for you, refer to pages 60-61, which provides simple methods to help you calculate the costs and benefits of P2 techniques, including those not-so-obvious costs that impact the workplace and environment and are often hidden in your shop's overhead.

Prepress Operations (tray processing)

1. Store temperature and light sensitive chemicals according to manufacturer's directions.

2. Avoid overstock of time-sensitive materials.

3. Recycle photographic film.

4. Look for nonhazardous intensifiers and reducers that do not contain mercury and cyanide salts.

5. Use formaldehyde-free photochemicals.

6. Use floating lids on the photochemical hand trays to reduce air exposure and maximize solution life.

7. For tray processing, use countercurrent washes. Use used rinsewater in the initial film wash and fresh water in the last rinse bath. When the last rinse bath needs changing, use it for the initial bath.

Prepress Operations (film, plate, screen)

8. Change processor baths when no longer effective rather than on a fixed schedule. Test with a gray scale.

9. Extend bath life by adding replenisher to allow more silver buildup before treatment with a silver recovery unit.

10. Limit your exposure to aerosol products. If possible, use only nonhazardous aerosols, pumps or refillable bottles.

11. Set processors according to manufacturer specifications to minimize fresh water use, or install electronic valves for better water management and solution recirculation.

12. Use water-based plate developers.

13. Calibrate and adopt photoprocessor for proper chemical consumption. Periodically check/replace rubber rollers.

14. Install recirculation units for fixer, developer and rinsewater. An in-line SRU with a fixer recirculation system can prolong fixer usage.

15. Install metallic replacement cartridges after electrochemical SRUs to collect more silver. Two-stage SRUs can remove up to 99% of the total silver if properly maintained. Use ion exchange columns as a third stage (or for rinsewater), if your wastewater discharge must be free of silver.

16. Use water-based platen and screen adhesives to reduce VOC emissions.

17. Use direct-to-plate or digital prepress systems to eliminate the use of film processing. (Note: some computer to plate imaging systems may still use chemical developing solutions using silver halide or solvents.)

Press Operations (general and lithographic)

18. Order only the amount of ink you need to do the job.

19. Reuse dirty solvent for the first noncritical cleaning step followed by cleaner solvent.

20. Use alcohol-substitutes in the fountain solution.

21. Keep solvents in closed containers and wash baths.

22. Gravity drain or mechanically wring saturated shop towels to remove excess solvent.

23. Use spray or plunger cans for cleaning solvents.

24. Use spot application of solvents for stubborn ink residues rather than general over applying of solvent.

25. Use spray preservatives conservatively to prevent ink from drying in fountains overnight. *(This technique may result in higher startup wastes and should be compared to new non-skimming inks.)*

26. Keep ink containers covered to prevent skim over. Investigate new-non-skimming ink systems.

27. Scrape as much ink out of containers as possible. Scrape leftover ink from fountains for reuse or blending into black ink.

28. Use transfer pumps for press cleaning solvent drums to minimize spillage.

29. Use cleaning solvents that can be diluted with water before application. Conduct trials to find the best mix.

30. Obtain state and federal reports of blanket wash effectiveness and factsheets on how to evaluate them.

31. Reuse lightly soiled shop towels for noncritical cleaning.

32. Cover ink fountains on newspaper web presses.

33. Use alternative inks, such as vegetable-based inks.

34. Evaluate and use water-based cleaning solutions.

35. Use solvent sinks for parts cleaning to reduce once-used solvent cleaning of press parts.

36. Take leftover color inks and mix them for reuse by using software programs.

37. Evaluate alternative ink and presswash systems with lower VOCs or no VOCs for lithographic printing.

38. Install an explosion-proof centrifuge or dry cleaning units for wringing shop towels dry. (Most cost effective for mid-size and large users of shop towels.)

39. Recycle press cleaning solvent using a fully-enclosed solvent recovery system. *(May require a permit to operate.)*

40. Install ink recycling systems or use mobile systems provided by vendors.

41. Retrofit presses with automatic blanket washers or purchase new presses with these cleaning systems.

42. Install a fully-enclosed shop towel cleaning system.

43. Use UV-cured inks, electron-beam (ECB) inks or water-based inks when possible.

Press Operations (gravure/flexographic/screen)

44. Use ink thinners with less toxic ingredients.

45. Use more effective, safer emulsion and haze remover products and avoid using degreasers.

46. Reclaim screens immediately after a print run using alternative screen reclamation chemicals.

47. Reclaim waste ink onsite or work out left over inks using computer software.

48. Enclose or cover ink fountains.

49. Use enclosed or angled doctor blades on rollers.

50. Reduce ink evaporation by using diaphragm pumps that heat inks less than mechanical vane pumps.

51. Install automatic ink jets to keep ink conditions optimal.

52. Use an evaporator to reduce the volume of nonhazardous waste ink or other water-based materials.

53. Use high pressure water cleaning of screens to eliminate degreasers and emulsion and haze removers. Install a water filtration system for ink particulates.

54. Use water-based inks with less than 10% VOC content. (This may require large capital costs to retrofit presses.)

55. Investigate UV/ECB curing systems.

Postpress Operations

56. Use water-based, animal-based and hot-melt adhesives when possible.

57. Don't use adhesives containing F-listed solvents.

58. Avoid chlorinated solvents for cleaning adhesive residues. Use alternative petroleum solvents, if possible.

59. Use water-based coatings, UV varnishes and hot melt adhesives for in-line and off-line surface coating.

Solid Waste Opportunities

60. Purchase raw materials in the largest container possible without promoting spoilage.

61. Require vendors to take back unused products.

62. Recycle used aluminum printing plates.

63. Clean ink containers as much as practical. Recycle the containers, if possible.

64. Purchase paper stock with preconsumer and postconsumer waste.

65. Minimize use of packaging materials for printed product when delivering to the customer.

66. Recycle all paper wastes. Segregate white and office paper from production paper wastes.

67. Recycle waste corrugated cardboard.

68. Recycle used or broken pallets.

Section 5.0
Existing Permits and
Self-Certification

The ERP for printers is designed to replace most of the existing permits (air, wastewater and hazardous waste) previously required. However, there are still limited circumstances where a printer must retain an existing permit or obtain a new permit for expanding or changing certain operations.

This section addresses the most common scenarios with respect to existing permits. <u>If you have a different circumstance or are under a Consent Order that conflicts with the ERP standards, you must call DEP for guidance.</u>

IMPORTANT NOTE

You are required to complete the self-certification form, regardless of the permits you hold as a printer, with one exception. If you are a major source and require an operating permit, you are <u>NOT</u> subject to the ERP standards and must keep your permit.

DEFINITION REMINDER

> **Conforming operation means a printing operation that uses raw materials that meet applicable performance standards in Section 3.3.3, Tables 1 and 2.**

> **Nonconforming operation means a printing operation that uses one or more raw materials that do not meet the performance standards in Section 3.3.3, Table 2.**

> **Year means the last consecutive 12 month period of time.**

> **Self-Converted Operations are operations where the printer has the option, and elects, to comply with the ERP standards instead of an existing permit. See scenarios 1 and 2 on page 35 for when you can self-convert.**

5.1 Air Emissions.

Scenario 1 - I have a permit for existing conforming and/or nonheatset operations.

Permits are no longer required for nonheatset offset lithographic printing, screen printing, and graphic arts printing that conform to the performance standards in Tables 1 and 2 on pages 21-22. Printers who hold existing permits for such operations have two options:

- Comply with the ERP standards. The permit(s) for these operations will no longer apply. **OR**

- Comply with the terms and conditions of the permit. (Remember, you must still self-certify.) However, this option is only available for the next three years. When you certify in September 2001, you must be in compliance with the ERP standards.

DEP recommends that you use <u>the first option above and comply with the ERP standards</u>, unless you have strong reason to retain a permit. (For example, you may need time to purchase and install new equipment, modify your practices or investigate new products.)

If you choose to comply with your permit, then you must state that on the Self-Certification Form. If you want to self-convert an operation(s) and comply with the ERP standards before the next time you certify, then you must notify DEP in writing within 30 days of self-converting to the ERP standards. Refer to the definition of self-converted operation on the previous page.

In the event that you did not obtain permits for some (or all) conforming or nonheatset operations, you must comply with the ERP standards.

Scenario 2 - I have a permit for existing nonconforming and/or heatset operations.

If your total actual facility emissions are • 10 tons VOC/year (based on raw material usage only), then the permit is <u>NO LONGER REQUIRED</u>. Printers who hold existing permits for those operations have two options.

- Comply with the ERP standards. (See Section 3.3.5, page 23.) The permit(s) for these operations will no longer apply. **OR**

- Comply with the terms and conditions of the permit. Remember, you must still self-certify.

If your total actual facility emissions are > 10 tons VOC/year (based on raw material usage only), then you must continue to comply with your existing permit(s) for the nonconforming and heatset operations. Remember, you must still self-certify.

IMPORTANT NOTE

If you have a permit(s) for any combination of conforming, nonconforming or heatset operations, follow the examples in Scenarios 1 and 2 above.

Scenario 3 - I have a facility with ≤ 10 tons VOC/year (based on either raw material usage or restrictions contained in a permit) and intend to install a nonconforming or heatset operation.

To see if your total actual facility emissions are • or > 10 tons VOC/year, see Section 1.0 in the guidance on page 56.

If your total actual facility emissions, including actual emissions from the new operation (i.e. calculated actual emissions for the new operation based on projected raw materials used only), remain • 10 tons VOC/year, then you can install the new operation without obtaining a permit, and the new operation must comply with the ERP standards in Table 3, page 24, and the recordkeeping requirements on page 27 and 28. Any other nonconforming or heatset operations you add in the future that result in total actual emissions > 10 tons VOC/year will <u>REQUIRE</u> a permit for those operations only. Refer to Section 4.0 of the guidance on page 57.

If your total actual VOC emissions (including actual emissions from the new operation, i.e. calculated actual emissions based on projected raw materials used only) exceed 10 tons VOC/year, then you must obtain a permit for the new operation.

Scenario 4 - Do I still need to fill out the DEP Source Registration form?

If you are a Small or Midsize Printer, you do not have to complete the Source Registration form.

If you are a Large Printer and you have total facility emissions • 25 tons VOC/year, you do not have to complete a Source Registration form. However, you will be required to provide some emissions data on the Self-Certification form in place of the Source Registration form.

Large Printers with total facility emissions over 25 tons VOC/year are still required to complete the Source Registration Form.

Scenario 5 - Do I still need a DEP Permit for my boiler?

You must continue to comply with your existing permit(s) for boilers and other fuel combustion equipment in your facility. If you do not have a permit or are uncertain about needing one, call the DEP Infoline for guidance at (617) 338-2255 or 1-800-462-0444.

Combustion equipment (boilers, hot water heaters, emergency generators, etc.) with a heat input • 10 MMBtu/hour, or > 5 MMBtu/hour burning 1% sulfur fuel, or > 3 MMBtu/hour burning > 1% sulfur fuel, need a separate permit. For combustion equipment that use fuels other than natural gas, liquefied propane gas, petroleum fuels (Nos. 1 through 6), call the DEP InfoLine for guidance.

  The following combustion equipment do not need a permit.

- An emergency generator that has a heat input of < 3 MM Btu/hour does not need a separate permit. No other requirements.

- No permit is required for an emergency generator that has a heat input of > 3 MMBtu/hour and • 10 MMBtu/hour and is used < 300 hours per 12 month rolling period. You need to keep records on equipment specifications, fuel usage, operating hours, and service activities. For more information see, 310 CMR 7.02(14).

- A boiler that has a heat input of < 3 MMBtu/hour does not need a permit.

- A boiler that has a heat input of • 3 MMBtu/hour must be inspected and maintained according to manufacturer recommendations. The boiler must be tested annually and the test results posted near the boiler.

In late 1998, DEP expects to expand ERP certification to include new and modified boilers. Call the DEP Infoline for more information.

5.2 Wastewater.

Scenario 1 - I have an Industrial Wastewater Permit (IWWP) for my prepress, printing, coating and bindery operations.

This permit is NO LONGER REQUIRED. Comply with and self-certify to the ERP standards.

Scenario 2 - I have a Holding Tank Permit for Nonhazardous Industrial Wastewater.

This permit is <u>NO LONGER REQUIRED</u> for aboveground storage tanks. Comply with and self-certify to the ERP standards. A permit is <u>STILL REQUIRED</u> for underground storage tanks.

5.3 Hazardous Waste.

Scenario 1 - I have a Class A Recycling Permit for a stand alone silver recovery unit.

This permit is <u>NO LONGER REQUIRED</u>. Comply with and self-certify to the ERP standards.

Scenario 2 - I have a Class A Recycling Permit for a solvent recovery system.

This permit is <u>STILL REQUIRED</u>. Comply with the permit requirements <u>and</u> self-certify to the ERP standards.

Scenario 3 - I have a Class A Recycling Permit for sending waste oil offsite for fuel blending and energy recovery.

This permit is <u>STILL REQUIRED</u>. Comply with the permit requirements <u>and</u> self-certify to the ERP standards.

The Black Ink Room: Hazardous Waste

Common Environmental Abbreviations

BWP	Bureau of Waste Prevention, DEP	MSDS	Material Safety Data Sheet
DEP	Department of Environmental Protection (Massachusetts)	MWRA	Massachusetts Water Resources Authority
EOEA	Executive Office of Environmental Affairs	OSHA	Occupational Safety and Health Administration (Federal)
EPA	Environmental Protection Agency (Federal)	OTA	Office of Technical Assistance
°F	Fahrenheit	ppb	Parts per billion
FP	Flash Point	ppm	Parts per million
HAP	Hazardous Air Pollutant	P2	Pollution Prevention
H_20	Water	RCRA	Resource Conservation and Recovery Act (Federal)
IPA	Isopropyl alcohol	SRU	Silver Recovery Unit
kg	Kilogram	SQG	Small Quantity Generator
LDR	Land Disposal Restriction	TCLP	Toxicity Characteristic Leaching Procedure
LQG	Large Quantity Generator	tpy	Tons per year
mg/L	Milligrams per Liter	UV	Ultraviolet light
MGL	Massachusetts General Law	VOC	Volatile Organic Compound
mm	Millimeter	VSQG	Very Small Quantity Generator

Common Regulatory Terms

Gravure Printing	An intaglio printing operation in where ink is transferred from wells on a plate to the substrate by pressure, with excess ink removed from the surface of the plate by a doctor blade. This term also includes die stamping operations.
Flexographic Printing	A printing system utilizing a flexible rubber or elastomeric image carrier in which the image area is raised relative to the non-image area. The image is transferred to the substrate through first applying ink to a smooth roller which in turn rolls the ink onto the raised pattern of a rubber or elastomeric pad fastened around a second roller, which then rolls the ink onto the substrate.
Letterpress	A method where the image area is raised relative to the non-image area and the ink is transferred to the paper directly from the image surface.
Heatset Press	An offset lithographic printing press, where the solvent component of the ink is driven off with the use of heat from dryers or ovens.
Flash Point	The temperature at which vapors from a solvent/solid will ignite. The lower the flash point the more flammable the solution.
Vapor Pressure	A method of measuring the rate of evaporation of a solution. The higher the vapor pressure the faster it evaporates. Usually provided in mm Hg (mercury).

Performance Standards	Standards for vapor pressure or VOC content that apply to inks, coatings, adhesives, fountain solution, or press/screen cleaning solutions.	
Conforming Operations	A press or presses that meet the performance standards.	
Non-Conforming Operations	A press or presses that use ink, coating, or adhesive which does not meet the performance standards and the printer has demonstrated that it is technically or economically infeasible to use ink, coating, or adhesive that meets those standards.	
Extreme Performance Ink	An ink/coating used in screen printing on a nonporous substrate designed to withstand any of the following:: more than two years of outdoor exposure; exposure to industrial-grade chemicals, solvents, acids, or detergents, oil products, cosmetics; temperatures exceeding 76°C (170°F); vacuum forming; embossing; or molding.	
Hazardous Air Pollutants	An air contaminant listed by EPA as a HAP, pursuant to 42 U.S.C. 7401, § 112 and found to be hazardous to public health and the environment.	
Silver-bearing Wastewater	Wastewater containing more than 2 ppm silver before any treatment.	
Silver Recovery Unit (SRU)	A small, onsite treatment system specially designed to remove silver from wastewater.	

(Typical printer wastes by EPA Waste Code are bold.)

D001	Ignitable: Has a flash point of 140°F or less.	
D002	Corrosive: Liquids that easily corrode materials or human tissue and have a pH less or equal to 2 or greater than or equal to 12.5.	
D003	Reactive: Potentially explosive or produces toxic gases when mixed with water, air or other incompatible materials.	
D004 - D043	Toxic by the laboratory test, Toxicity Characteristic Leaching Procedure (TCLP). Refer below.	

Compound	Waste Code	Regulatory Level (ppm)	Compound	Waste Code	Regulatory Level (ppm)
Arsenic	D004	5.0	Hexachlorobenzene	D032	0.13
Barium	**D005**	**100.0**	Hexachloro-1,3-butadiene	D033	0.5
Benzene	D018	0.5	Hexachloroethane	D034	3.0
Cadmium	D006	1.0	Lead	D008	5.0
Carbon Tetrachloride	D019	0.5	Lindane	D013	0.4
Chlordane	D020	0.03	Mercury	D009	0.2
Chlorobenzene	D021	100.0	Methoxychlor	D014	10.0
Chloroform	D022	6.0	**Methyl ethyl ketone**	**D035**	**200.0**
Chromium	D007	5.0	Nitrobenzene	D036	2.0
o-Cresol	D023	200.0	Pentachlorophenol	D037	100.0
m-Cresol	D024	200.0	Pyridine	D038	5.0
p-Cresol	D025	200.0	Selenium	D010	1.0
2,4-D	D016	10.0	**Silver**	**D011**	**5.0**
1,4-Dichlorobenzene	D027	7.5	**Tetrachloroethylene**	**D039**	**0.7**
1,2-Dichloroethane	D028	0.5	Toxaphene	D015	0.5
1.1-Dichloroethylene	D029	0.7	**Trichloroethylene**	**D040**	**0.5**
2,4-Dintrotoluene	D030	0.13	2,4,5-Trichlorophenol	D041	400.0
Endrin	D012	0.02	2,4,6-Trichlorophenol	D042	2.0
Heptachlor	D031	0.008	Vinyl Chloride	D043	0.2

F-Listed Solvent Hazardous Wastes
(Typical printer solvents and EPA Waste Codes are bold.)

F-Listed Solvents contain 100% of an individual solvent or •10% when in combination with other F-Listed Solvents.

F001   Halogenated solvents used in degreasing: tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons.

F002   Halogenated solvents: **tetrachloroethylene**, **trichloroethylene**, **methylene chloride**, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,1,2-trifluoroethane, orthodichlorobenzene, trichlorofluoromethane, and 1,1,2-trichloroethane.

F003   Ignitable nontoxic solvents: **xylene**, **acetone**, ethyl acetate, **ethyl benzene**, ethyl ether, methyl isobutyl ketone (MIBK), n-butyl alcohol, cyclohexanone, and **methanol**.

F004   Toxic non-halogenated solvents: cresols, cresylic acid, and nitrobenzene.

F005   Ignitable toxic solvents: **toluene**, **methyl ethyl ketone (MEK)**, carbon disulfide, isobutanol, **benzene**, pyridine, 2-ethoxyethanol, and 2-nitropropane.

Regulatory Status		Hazardous Waste Accumulation Limits			Waste Oil Accumulation Limits			Management Requirements		
Hazardous Waste	Waste Oil	Time (days)	Tank Volume (kg)	Container Volume (kg)	Time (days)	Tank Volume (kg)	Container Volume (kg)	Accumulation Area Standards	Emergency Preparation	Written Training & Contingency Plans
SQG	SQG	180	6,000[1]	2,000	180	6,000[1]	2,000	YES	YES	NO
SQG	VSQG	180	6,000[1]	2,000	180	6,000[1]	2,000	YES	YES	NO
SQG	NONE	180	6,000[1]	2,000	N/A	N/A	N/A	YES	YES	NO
VSQG	SQG	NO LIMIT	600	600	180	6,000[1]	2,000	YES	YES	NO
VSQG	VSQG	NO LIMIT	600	600	NO LIMIT	600	600	YES	NO	NO
VSQG	NONE	NO LIMIT	600	600	N/A	N/A	N/A	YES	NO	NO
NONE	SQG	N/A	N/A	N/A	180	6,000[1]	2,000	YES	YES	NO
NONE	VSQG	N/A	N/A	N/A	NO LIMIT	600	600	YES	NO	NO

[1] When accumulating in both tanks and containers, the total accumulation cannot exceed 6,000 kilograms and the container accumulation cannot exceed 2,000 kilograms.

Definitions: Regulatory Status   Pounds Hazardous Waste/Month   Conversions: Kilograms   Pounds   Gallons (varies by substance)

LQG	>2,200		
SQG	220 - 2,200		
VSQG	<220		

Kilograms	Pounds	Gallons (varies by substance)
100	220	25 - 27
600	1,320	150 - 165
1,000	2,200	250 - 265
2,000	4,400	500 - 550
6,000	13,320	1,500 - 1,650

Insert Hazardous Waste Sign graphic.

Insert Emergency Information Poster Graphic

Precious Metal Transporters

Associated Processor Service
15 Common Street
Natick, MA 01760
508-655-7750

B&D Associates, Inc.
129 Liberty Street
Central Falls, RI 02863
401-722-9845

Ecology Recovery Systems
Suite 4, 330 Tacoma Street
Worcester, MA 01605
508-852-8451

Freedman, Joseph Co. dba Solution Services
40 Albany Street
Springfield, MA 01101
413-781-4444

Global Recycling Technologies, Inc.
218 Canton Street
Stoughton, MA 02072
781-341-6080

Karlan Service, Inc.
189 East 7th Street
Peterson, NJ 07661
201-967-9887

Merrimack Valley Medical Services Co. (BFI)
Zero Farley Street
Lawrence, MA 01843
978-687-2775

National Waste Management, Inc.
362 Putnam Hill Road
Sutton, MA 01590
508-476-1900

PSS Imaging, Inc.
22-8 Prospect Street
Woburn, MA 01801
781-935-4470

Radiology Resources
24 Torrice Drive PO Box 2263
Woburn, MA 01888
781-935-4470

Safety-Kleen Corp.
960 Turnpike Street
Canton, MA 02021
781-828-5445

J.B. Silva Co.
61 Nichols Street
Danvers, MA 01923
508-777-2020

Solutek
94 Shirley Street
Boston, MA 02119
617-445-5335

Stericycle, Inc. (amalgam scrap, lead foil)
149 Lake Look Road
Deerfield, IL
847-274-5172

Instate Transporters of Hazardous Waste and Waste Oil

This is a list of licensed instate transporters authorized to provide special services to VSQGs and SQGs. For additional transporters, call DEP's Hazardous Waste Compliance Assistance Line (617-292-5898).

Metropolitan Boston and Northeast Region

Absolute Environmental, Inc.
995 Old Post Road
Walpole, MA 02081
508-660-0010

Arlex Oil Corp.
275 Mass Avenue
Lexington, MA 02173
781-862-3400

The Aulson Co., Inc.
191 S. Main Street
Middleton, MA 01949
978-774-8887

Enpro Services, Inc.
12 Mulliken Way
Newburyport, MA 01950
978-465-1595

General Chemical Corp.
Box 608 133-138 Leland Street
Framingham, MA 01701
508-872-5000

Geochem, Inc./Jet-Line Environmental Services
263 Howard, Street
Lowell, MA 01852
978-344-2510

Autobody Solvent Rec. Corp.
338 Russell Street
Woburn, MA 01801
781-933-8283

Clean Harbors Environmental Services, Inc.
1501 Washington Street
Braintree, MA 02184
781-849-1800

Craftsmen Construction Corp.
PO Box 548 124 White Street
Winchester, MA 01890
781-729-4197

Green Environmental, Inc.
216 Ricciuti Drive
Quincy, MA 02169
617-479-0550

Suffolk Services, Inc.
18 William Street
Everett, MA 02149
800-342-3515

Triumvirate Environmental
63 Inner Belt Road
Somerville, MA 02143
617-628-8098

Southeast Region

Cyn Oil Corp./Cyn Environmental Services
PO Box 119 1771 Washington Street
Stoughton, MA 02072

Fleet Environmental Services, Inc.
8 Harding Street, Building 2
Lakeville, MA 02347
508-946-6900

Frank Corp.
150 Herman Melville Boulevard
New Bedford, MA 02740-7844

Franklin Environmental Services, Inc.
185 Industrial Road
Wrentham, MA 02090
508-384-6151

Central Region

Evergreen Construction Co., Inc.
34 Williams Way
Bellingham, MA 02019
508-966-0330

North Country Environmental Services, Inc.
100 Medway Street, Suite 403

Tolman Construction Service, Inc.
74 Maple Street
Baldwinville, MA 01436

The Tyree Organization, Ltd.
9 Otis Street
Westborough, MA 01581-3311

Milford, MA 01757   508-871-8300
508-634-9800

Western Region

MaxyMillian Technologies, Inc.
1801 East Street
Pittsfield, MA 01201
Oil Recovery Corp.
138 Palmer Avenue
W. Springfield, MA 01089
413-737-2949

Southhampton Sanitary Engineering Co., Inc.
168 County Road
Southhampton, MA 01073
413-532-3876

Instate Transporters of Waste Oil Only
(Transporters who are permitted to provide special services to VSQGs and SQGs.)

Bonner Industries, Inc.
72 North Main Street
No. Carver, MA 02355
508-866-5230

Murphy's Waste Oil Service
252 R Salem Street
Woburn, MA 01801
781-935-9066

Out of State Transporters of Hazardous Waste and Waste Oil
(Transporters who are permitted to provide special services to VSQGs and SQGs.)

Coating Systems, Inc.
55 Crown Street
Nashua, NH 03060
CWM Chemical Services, Inc.
1135 Blamer Road
Model City, NY 14107-0200
Dependable Environmental Services, Inc.
48 Lowell Road PO Box 117
Windham, NH 03087
Environmental Products & Services, Inc.
532 State Fair Boulevard PO Box 315
Syrcuse, NY 13209
315-471-0503
Environmental Waste Resources, Inc.
PO Box 10009
Waterbury, CT 06725-0009
Inland Waters Pollution Control, Inc.
2021 S. Schaefer Highway
Detroit, MI 48217
313-841-5800
Lincoln Environmental, Inc.
333 Washington Highway
Smithfield, RI 02917
401-232-3353

LRS Enviro-Services, Inc.
400 Lafayette Road, Route 1
Hampton, NH 03842
C.W. Miller Co.
One Hodsell Street
Cranston, RI 02910
The NDL Organization, Inc.
1000 Lower South Street
Peekskill, NY 10566
Safety-Kleen Corp.
1000 N. Randall Road
Elgin, IL 60123
800-669-5840
Total Waste Management Corp.
142 River Road
Newington, NH 03801
TRI-S, Inc.
25 Pinney Street
Ellington, CT 06029
860-875-2110

The Magenta Ink Room : Wastewater

Silver Recovery Unit Log

Complete a separate log for **EACH silver recovery unit (SRU)**. An SRU may be comprised of one or more stages such as an electrolytic unit followed by one or more cartridges. Fill in the blanks as necessary. You may use an equivalent form. You are required to keep the log for three years.

SRU Location or other identification. _____

Total Capacity of SRU. _____ gallons per day

Average Daily Flow. _____ gallons per day

Sampling and Analysis

Electrolytic and cartridge SRUs must be sampled at least once per year. The sample must be taken within one month prior to changing the cartridges and analyzed by a state-certified laboratory.

All other systems must be sampled monthly.

Sample Date (m/d/y)	Silver Concentration mg/L (parts per million)	Sample Date (m/d/y)	Silver Concentration mg/L (parts per million)
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Electrolytic SRU   **Cartridges   # of cartridges in series _____**

Cleaning & Servicing Dates (m/d/y)	Cleaning & Servicing Dates (m/d/y)	Replacement Dates (m/d/y)	Replacement Dates (m/d/y)
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Silver-bearing Wastewater Volume Calculation Worksheet

	Fixer (gals)	Bleach-Fix (gals)	Stabilizer (gals)	Other (gals)	Monthly Total (gals)
January					
February					
March					
April					
May					
June					
July					
August					
September					
October					
November					
December					
				Total	

Insert Sink Sign graphic.

Insert Sink Sign graphic.

List of Local Wastewater Treatment Plants

City/Town	Contact Person	Tel. Number
Adams	Joseph Fijal	(413) 743-8370
Amesbury	Brian LeBlanc	(978) 388-1912
Amherst	Robert Pariseau	(413) 549-5424
Athol	Mark Day	(508) 249-7600
Attleboro	Paul Nicholson	(508) 761-5167
Ayer	Robert Smith	(978) 772-8243
Barnstable/Hyannis	Peter Doyle	(508) 790-6335
Barre	Gerry Ballantine	(508) 355-6303
Belchertown	Steve Williams	(413) 323-6311
Billerica	Arthur Malcuit	(978) 671-0956
Bridgewater	Joseph Souto	(508) 697-6151
Brockton	Steven Kruger	(508) 580-7885
Buckland	John Patch	
Charlemont	Dawn Peters	
Charlton	Gary Langlouis	(508) 248-7242
Charles River PCD	Robert McRae	(508) 533-6762
Chatham	Peter Ho	(508) 945-5153
Chicopee	Thomas Hamel	(413) 592-6808
Clinton	Rcik Trubiano	(978) 365-6144
Cohasset	Dick Nye	(781) 383-1519
Concord	Peter Nyberg	(978) 371-7174
Dartmouth	M. David Andrade	(508) 999-0740
Dearfield	Edward Jablonski	(413) 774-4595
Dennis	Weston & Sampson	(508) 760-2990
Douglas	Marcel Tremblay	(508) 476-2400
Easthampton	David Gagnon	(413) 527-4777
Edgartown	Joe Alosso	(508) 627-5482
Erving/Miller Falls	Michael Pierce	(413) 659-3354
Erving Center	Benjamin Thompson	(413) 544-2711
Fairhaven	Linda Simmons	(508) 979-4030
Fall River	James Louzon	(508) 672-4530
Falmouth	Robert White	(508) 540-9437
Fitchburg-East	Richard H. Cooper	(978) 345-9626
Fitchburg-West	Dennis Meunier	(978) 345-9624
Gardner	Jerry Robillard	(978) 632-4137
Gloucester	Michael Thompson	(978) 281-3741
Greater Lawrence	Mark Concheri	(978) 685-1612
So. Grafton	Fred Haffy	(508) 839-8526
Great Barrington	Tim Drumm	(413) 528-0650
Greenfield	Sandra Shields	(978) 376-5424
Hadley	Dennis Pipczynski	(413) 585-0460
Gilbertville	Thmas Collett	(413) 477-6959
Hatfield	Frank Motyka	(413) 247-9844
Haverhill	John Connor	(978) 374-2382
Holyoke	Thomas Ordway	(413) 534-2222
Hoosac/Williamstown	Carl Dickinson	(413) 548-5016
Hopedale	Donna Ares	(508) 634-2210
Hudson	Robert Eddy	(978) 562-9333
Hull		(781) 925-0906
Huntington	Brian Sheedy	(413) 667-3356
Ispwich	Tim Henry	(978) 356-5532
Lee	Ken Labier	(413) 243-5525
Leicester	Frank Lyon	(508) 356-5532
Lenox	Philip Bailey	(413) 637-1973
Leominster	Robert Chalifoux	(978) 537-5720
Lowell	Mark Young	(978) 970-4248

Lynn	James Taylor	(781) 592-7048
Manchester	Jim Sibbalds	(978) 526-4612
Mansfield	William Handy	(508) 285-5746
Marion	Richard Guerzoni	(508) 748-3540
Marlborough-East	Dan McNamara	(508) 485-1755
Marlborough-West	Harry Butland	(508) 481-1208
Marshfield	Kevin Silva	(781) 834-5021
Maynard	Charles Helen, Sr.	(978) 897-1020
Medfield	Peter Oaffoia	(508) 359-4533
Merrimac	Charles Nevin	(978) 346-9988
Middleborough	Joseph Ciaglo	(508) 946-2485
Milford	John Mainini	(508) 473-2054
Millbury	Bradford Lange	(508) 865-3780
Monroe	Ronald Rutstein	(413) 424-7723
Montague	Robert Trombley	(413) 773-8865
MWRA		(617) 241-2333
Natucket	Rick Eldridge	(508) 325-5333
New Bedford	James Gelipeau	(508) 991-6165
Newburyport	Joseph Dugan	(978) 465-4422
No. Attleboro	John Horton	(508) 695-7872
North Brookfield	Rodney Jenkins	(508) 867-0211
Northhampton	James Dostal	(413) 586-6950
Northbridge	James Madigan	(508) 234-2154
Northfield	Lionel Gagnon	(413) 498-5116
Orange	Larry Adams	(978) 544-1114
Orleans	James Burgess	(508) 255-1150
Oxford/Rochdale	Robert Wilson	(508) 892-9549
Palmer/Three Rivers	Gary Kuczarski	(413) 283-2671
Pepperell	Henry Albro	(978) 433-9859
Pittsfield	Tom Landry	(413) 499-9304
Plymouth	Gary Frizzell	(508) 830-4159
Rockland	Aram Varjabedian	(781) 878-1863
Rockport	Robert Cashman	(978) 546-7888
South Royalston	John Drouin	(978) 249-3318
Russell	Peter McLaughlin	(413) 862-3101
Salisbury	Jeff Ingalls	(978) 465-4058
Salem/South Essex SD	Harold Newhall	(978) 744-4550
Scituate	Bob Rowland	(781) 545-8736
Somerset	Harold Grazia	(508) 646-2838
South Hadley	Rudolf Urgiel	(413) 538-5040
Southbridge	Paul Dransnecky	(508) 764-4927
Spencer	Mark Robidoux	(508) 885-7542
Springfield	George A. Romano	(413) 787-6256
Stockbridge	David Sparks	(413) 298-4067
Sturbridge	Racy Earnest	(508) 347-2514
Sunderland	Robert Gabry	(413) 665-1447
Swampscott	Patrick Brennan	(781) 592-5393
Taunton	Dan Walsh	(508) 823-3582
Templeton	Mark Kajka	(978) 939-5171
Upper Blackstone SD	Arthur Levesque	(508) 755-1286
West Upton	Leo Morin	(508) 529-3993
Uxbridge	William Burma	(508) 278-2887
Ware	Robert Raczowka	(413) 967-9624
Wareham	James Shaw	(508) 295-6144
Warren	Shaun Romanski	(413) 436-5796
Webster	Philip Robert	(508) 949-3865
West Stockbridge	Keith Clark	(413) 232-0309
Westborough	Chris Pratt	(508) 366-1870
Westfield	Alan Pierce	(413) 572-6313

Winchendon	Edmond Fitzgibbons	(978) 297-0536
Yarmouth	John MacArthur	(508) 760-2990

The Cyan Ink Room : Air Emissions

VOC and HAP Data Sheet

Properties of the Products as Supplied by the Manufacturer

Property Manufacturer _____

Property Identification _____

Product density	___lb/gal. ASTM D1475-60	*VOC content*	___lb/gal.
Total volatiles	___Weight % ASTM	*Flash Point*	___ASTM D93
Water content	___Weight % ASTM D 4017	*HAP Content*	___Method 311
Organic volatiles	___Weight %		

Hazardous Air Pollutants:

Name   **Weight %**

_____   _____

_____   _____

_____   _____

_____   _____

_____   _____

Fountain Solution VOC Addition Form

Indicate When Any VOC is Added To Press Ready Fountain Solution

Press	VOC in Concentrate (ounces)	VOC in Additive (ounces)	VOC Added (ounces)	Final VOC Content in Weight Percent

Final Press Ready VOC Concentration:

Step 1   Weight of VOC in Concentrate = <u>Oz. Concen. x VOC Content (lbs/gal)</u>
                                                                                128 oz/gal

Step 2   Weight of VOC in Additive = <u>Oz. Additive x VOC Content (lbs/gal)</u>
                                                                          128 oz/gal

Step 3   Weight of VOC Added = <u>Oz. Added VOC x VOC Content (lbs/gal)</u>
                                                                    128 oz/gal

Weight Percent VOC = $\dfrac{\text{Result of Steps } 1+2+3}{\text{Result of } 1+2+3 + 8.33 \text{ lbs/gal water}}$

How to Calculate Your VOCs and HAPs

If you are a large printer and purchased and/or used more than 3,000 gallons of press or screen cleaning solvents during the past 12 months.

Conversion chart of pounds/gallons/tons

1 gallon	*=*	*6-8 pounds (depends on product's specific gravity)*
275 gallons	*=*	*5 drums x 55 gallons (about 1 ton)*
3,000 gallons	*=*	*approx. 10 tons (depending on specific gravity)*
2,000 pounds	*-*	*1 ton*

STEP 1: Gather your Material Safety Data Sheets (MSDS) for:

- Blanket wash/roller wash/press wash/type wash
- Parts cleaner (solvent)
- Inks, coatings and adhesives
- Alcohol or alcohol substitutes (including fountain solution concentrate)
- Proofing system solutions (if alcohol or solvent based)
- Any other VOC-containing formulations you use (in excess of 55 gal. of incidental materials)

STEP 2: Complete the following for each product: (Sec. 2 or 3 of the MSDS for VOC content)

- Product name   _____   Mfr/vendor _____

- Monthly Use   _____ gallons (gals) or pounds (lbs) _____

- VOC Content _____

If VOC content of product is given in weight % VOC, then:

[total VOC % divided by 100] x lbs per month of product = lbs of total VOCs per month.

If VOC content is given in lbs VOC per gal of product, convert as follows and use result in the above formulas:

For calculating VOC in inks:

[lbs total VOC per gal of product] divided by [lbs per gal of product (density of product)] = lbs total VOC per lb of product = [total weight % divided by 100].

For press cleaning materials (sold by the gallon):

[lbs total VOC per gal of product] x gals per month of product = lbs. total VOCs/mo.

If VOC content is given in volume % VOC, contact your supplier or manufacturer to obtain weight % VOC.

STEP 3: Calculate Your Annual VOC Emissions:

Add up the monthly use of each product in lbs VOC/month.

[If you do not have actual product use records for the last 12 months, then take the monthly use of each product in lbs VOC/month and multiply by 12.)

Add the annual VOC emissions of each product and divide by 2,000 to obtain tons VOC/year.

Fountain Solution Batch VOC Content Form

Fountain Solution Concentrate

Product _____   *Density (lbs/gal)*:* _____

Formula Number: _____   *VOC Content (lbs/gal**):* _____

Fountain Solution Additive

Product _____   *Density (lbs/gal)*:* _____

Formula Number: _____   *VOC Content (lbs/gal**):* _____

Density can either be found on the Materials Safety Data Sheet or determined by multiplying the specific gravity from the MSDS by 8.33 pounds per gallon.

VOC content can either be found on the Material Safety Data Sheet, conducting EPA Method 24, or determined by summing the percent composition of each individual VOC and multiplying it by the density. Do not include exempt VOCs, especially Methylene Chloride and 1,1,1-Trichloroethane.

** Note: lbs/gal = (% volume of VOC x solvent density) - wt. of water

Ounces of Fountain Concentrate Added Per Gallon of Water.

Ounces of Fountain Additive Added Per Gallon of Water.

Press Ready VOC Concentration:

Step 1   Weight of VOC in Concentrate = $\dfrac{\text{Oz. Concen x VOC Content (lbs/gal)}}{128\ \text{oz/gal}}$

Step 2   Weight of VOC in Additive = $\dfrac{\text{Oz. Additive x VOC Content (lbs/gal)}}{128\ \text{oz/gal}}$

Weight Percent VOC = Step 1 + Step 2 /(Step 1 + Step 2 + 8.33)

VOC Composite Partial Pressure is calculated as follows:

$$PP_c = \sum_{i=1}^{n} \frac{(W_i)(VP_i)/(MW_i)}{W_w/Mw_w + W_e/Mw_e + \sum_{i=1}^{n} W_i/MW_i}$$

Where:

W_i	=	Weight of the "i" th VOC compound in grams
W_w	=	Weight of water in grams
W_e	=	Weight of exempt compounds in grams
Mw_i	=	Molecular weight of the "i" th VOC compound, in g-mole
Mw_w	=	Molecular weight of water, in g-mole
Mw_e	=	Molecular weight of exempt compound, in g-mole
PP_c	=	VOC composite partial pressure in mm Hg
VP_i	=	Vapor pressure of the "i" th compound, in mm Hg
n	=	The number of VOC compounds

Self-Converting Permit Worksheet

This worksheet provides an example on how to complete Questions 38 and 40 of the Self-Certification Form. These questions relate to existing air quality permits for printing operations in your shop.

The example assumes that you have two existing air quality permits. You intend to self-convert one permit and comply with the applicable ERP standards. The other permit, you intend to keep and comply with the permit conditions.

Question 37

Are you self-converting any of those permits? (see page 35, scenario 1 and 2 in workbook section 5.0)	Yes – Indicate the number of presses covered by each permit by completing the sections below. Complete one section for each permit.	No – Skip to Question 39

38. Application # MBR-96-IND-056

(This # is in the top right hand corner of your DEP Approval)

Write the # of presses covered by the permit in the box corresponding to each type of press. If no presses of a particular type are covered by the permit, write "0". See sample question #38, which is included in this packet, for an example.

Lithography	Screen	Gravure	Letterpress	Flexographic
1	0	0	0	0

Question 39

Do you hold any DEP air quality permits that you are not self-converting? (see pages 23 and 24, workbook sections 3.3.5 and 3.3.6; see also page 36, scenario 3, workbook section 5.0)	Yes – Complete the chart(s) below	No – Skip to Question 42

40. Application # <u>MP96022</u>

(This # is in the top right hand corner of your DEP Approval)

Write the # of presses covered by the permit in the box corresponding to each type of press. If no presses of a particular type are covered by the permit, write "0". See sample question #40, which is included in this packet, for an example.				
Lithography	Screen	Gravure	Letterpress	Flexographic
0	1	0	0	0

Guidance on Whether a Nonconforming or Heatset Press Needs a Permit

Section 1.0   How to Calculate Your Total Actual Facility Emissions

STEP 1: Gather all records on purchase and/or use of VOC containing materials, as well as source registration submittals from past years.

STEP 2: For unpermitted presses, calculate the emissions for the previous 12 months using the worksheet on page 53. If the press has operated less than 12 months, and therefore you do not have 12 months of emission information for that press, you can estimate the emissions using the following methods in descending order of reliability.

    1.   If you have an existing press of the same type and size as the new press, estimate the emissions for the new press based on the design capacity of the existing press.

    2.   If you have one or more months of purchase and/or use records for the new press, project the 12 months of emissions. See "How to Calculate Your VOCs and HAPs" on page 53.

    3.   If you have neither of the above, contact the manufacturer and estimate based on design capacity, expected capacity utilization, and material usage for the next 12 months.

STEP 3: For permitted presses, determine actual VOC emissions based on the purchase and/or use of any VOC-containing materials for the previous 12 months. If you have permitted control equipment, you can also include reduction efficiency (capture and control) in calculating your actual VOC emissions.

STEP 4: Add the emissions from step 3 and 4 and determine your total actual emissions. See example below.

Source	Raw Materials	%Reduction Efficiency	Total Annual VOCs
Unpermitted Press	5.0	N/A	5.0
Permitted Press	12.0	90	1.2
		Total Actual Facility Emissions	6.2

Values in tons VOC/year, unless otherwise noted.

Section 2.0   How To Determine Whether An Existing Unpermitted Press Needs A Permit

If you have no records on purchase/use of VOCs for that press, then you are required to get a permit.

 If you have purchase and/or use records, and your total actual facility emissions are
• 10 ton VOC/year, then a permit is not needed. Comply with the ERP standards, Table 3 (page 24) and the recordkeeping requirements on pages 27-28.

If you have purchase and/or use records, and the total actual facility emissions are
> 10 tons VOC/year, then you must get a permit for the press that trips the 10 ton facility-wide threshold.

If you have purchase and/or use records, your total actual facility emissions are
> 10 tons VOC/year, and you have two or more unpermitted presses that were installed at

different times, you may not need a permit for the older presses. A permit for the older press(es) is not required, if you have records to demonstrate that your total actual facility emissions were • 10 tons VOC/year (including emissions from the older unpermitted presses). The older press must comply with the ERP standards for facilities with • 10 tons VOC/year of total actual facility emissions. See Table 3 on page 24.

Section 3.0   How To Determine Whether An Existing Permitted Press Still Needs A Permit

Refer to Section 5.0. Permit Scenario 2 (page 35) provides guidance on existing presses with permits.

Section 4.0   How To Determine Whether A New Press Needs A Permit

Calculate your total actual facility emissions, including estimated emissions from the new press, using the steps in Section 1.0 above.

If your total actual facility emissions are • 10 tons VOC/year, then a permit is not required for the new press.

If your total actual facility emissions are > 10 tons VOC/year, then a permit is required for the new press.

(Typical HAPs used by printers are highlighted in bold.)

CAS No.	Chemical
75070	Acetaldehyde
60355	Acetamide
75058	Acetonitrile
98862	Acetophenone
53963	Acetylaminofluorene
107028	Acrolein
79061	Acrylamide
79107	Acrylic acid
107131	Acrylonitrile
107051	Allyl chloride (3-chloropropene)
92671	4-Aminobiphenyl
62533	Aniline
90040	o-Anisidine
1332214	Asbestos
71432	Benzene
92875	Benzidine
98077	Benzotrichloride
100447	Benzyl chloride
92524	Biphenyl
117817	Bis(2-ethylhexyl) phthalate (DEHP)
542881	Bis(chloromethyl)ether
75252	Bromoform
106990	1,3-Butadiene
156627	Calcium cyanamide
133062	Captan
63252	Carbayl
75150	Carbon disulfide
56235	Carbon tetrachloride
463581	Carbonyl sulfide
120809	Catechol
133904	Chloramben
57749	Chlordane
7782505	Chlorine
79118	Chloroacetic acid
532274	2-Chloroacetophenone
108907	Chlorobenzene
510156	Chlorobenzilate
67663	Chloroform
107302	Chloromethyl methyl ether
126998	Chloroprene
1319773	Cresols
95487	o-Cresol
108394	m-Cresol
106445	p-Cresol
98828	**Cumene**
94757	2,4-D, salts and esters
3547044	DDE
334883	Diazomethane
132649	Dibenzofurans
96128	1,2-Dibromo-3-chloropropane (DBCP)
84742	**Di-n-butyl phthalate**
106467	1,4-Dichlorobenzene (p)
91941	3,3'-Dichlorobenzidine

CAS No.	Chemical
111444	Dichloroethyl ether
542758	1,3-Dichloropropene
62737	Dichlorvos
111422	**Diethanolamine**
121697	N,N Dimethylaniline
64675	Diethyl sulfate
119904	3,3'-Dimethoxybenzidine
60117	Dimethylaminoazobenzene
119937	3,3'-Dimethyl benzidine
79447	Dimethyl carbamoyl chloride
68122	N,N-Dimethylformamide
57147	1,1-Dimethylhydrazine
131113	Dimethyl phthalate
77781	Dimethyl sulfate
534521	4,6-Dinitro-o-cresol and salts
51285	2,4-Dinitrophenol
121142	2,4-Dinitrotoluene
123911	1,4-Dioxane
122667	1,2-Diphenylhydrazine
106898	Epichlorohydrin
106887	1,2-Epoxybutane
140885	Ethyl acrylate
100414	**Ethylbenzene**
51796	Ethyl carbamate (urethane)
75003	Ethyl chloride
106934	Ethylene dibromide
107062	Ethylene dichloride (1,2-dichloroethane)
107211	**Ethylene glycol**
151564	Ethylene imine (aziridine)
75218	Ethylene oxide
96457	Ethylenethiourea
75343	Ethylidene dichloride (1,1-dichloroethane)
50000	**Formaldehyde**
76448	Heptachlor
118741	Hexachlorobenzene
87683	Hexachlorobutadiene
77474	Hexachlorocyclopentadiene
67721	Hexachloroethane
822060	Hexamethylene-1,6-diisocyanate
680319	Hexamethylphosphoramide
110543	**n-Hexane**
302012	Hydrazine
7647010	**Hydrochloric acid**
7664393	Hydrofluoric acid
123319	**Hydroquinone**
78591	**Isophorone**
58899	Lindane
108316	Maleic anhydride
67561	**Methanol**
72435	Methoxychlor
74839	Methyl bromide (bromomethane)
74873	Methyl chloride (chloromethane)
71556	**Methyl chloroform (1,1,1-trichlroethane)**

CAS No.	Chemical	CAS No.	Chemical
78933	**Methyl ethyl ketone (MEK)**	**108883**	**Toluene**
60344	Methylhydrazine	95807	2,4-Toluene diamine
74884	Methyl iodide	**584849**	**2,4-Toluene diisocyanate**
108101	**Methyl isobutyl ketone (MIBK)**	95534	o-Toluidine
624839	Methyl isocyanate	8001352	Toxaphene (chlorinated camphenes)
80626	**Methylmethacrylate**	120821	Trichlorobenzene
1634044	Methyl tert-butyl ether	**79005**	**1,1,2-Trichloroethane**
101144	4,4'-Methylene bis(2-chloroaniline)	**79016**	**Trichloroethylene (TCE)**
75092	**Methylene chloride**	95954	2,4,5-Trichlorophenol
101688	Methylene diphenyl diisocyanate	88062	2,4,6-Trichlorophenol
(MDI)		121448	Triethylamine
101779	4,4'-Methylenedianiline	1582098	Trifuralin
91203	**Naphthalene**	540841	2,2,4-Trimethylpentane
98953	Nitrobenzene	**108054**	**Vinyl acetate**
92933	4-Nitrobiphenyl	593602	Vinyl bromide
100027	4-Nitrophenol	**75014**	**Vinyl chloride**
79469	2-Nitropropane	75354	Vinylidene chloride (1,1-dichloroethylene)
684935	N-Nitroso-N-methylurea	**1330207**	**Xylene (all isomers and mixture)**
62759	N-Nitrosodimethylamine	**95476**	**o-Xylene**
59892	N-Nitrosomorpholine	**108383**	**m-Xylene**
56382	Parathion	**106423**	**p-Xylene**
82688	Pentachlorobenzene		
87865	Pentachlorophenol	**HAP Compounds**	
108952	Phenol		
106503	p-Phenylenediamine	7440360	Antimony compounds
75445	Phosgene	7440382	Arsenic compounds
7803512	Phosphine	7440417	Beryllium compounds
7723140	Phosphorus	**7440439**	**Cadmium compounds** (*not emitted*)
85449	Phthalic anhydride	**7440473**	**Chromium compounds**
1336363	Polychlorinated biphenyls (PCBs)	**7440484**	**Cobalt compounds** (*not emitted*)
1120714	1,3-Propane sultone	65996818	Coke oven emissions
57578	beta-Propiolactone	57125	Cyanide compounds
123386	Propionaldehyde	**I-311**	**Glycol ethers***
114261	Propoxur (Baygon)	**7439921**	**Lead compounds** (*not emitted*)
78875	Propylene dichloride	**7439965**	**Manganese compounds** (*not emitted*)
75569	**Propylene oxide**	7439976	Mercury compounds
75558	1,2-Propylenimine	E-196	Fine mineral fibers
91225	Quinoline	7440020	Nickel compounds
106514	Quinone	E-033	Polycyclic organic matter
100425	Styrene	Q-006	Radionuclides (including radon)
96093	Styrene oxide	**7782492**	**Selenium compounds** (*not emitted*)
1746016	2,3,7,8-Tetrachlorodibenzo-p-dioxin		
9345	1,1,2,2-Tetrachloroethane	*	**Includes mono and di-ethers of ethylene glycol,**
127184	**Tetrachloroethene**		
(perchloroethylene)			
7550450	Titanium tetrachloride		

HAPs Translator Threshold Table

To estimate whether you may exceed the 10 tons HAP/year individual threshold, use the following gallon conversion factors for each HAP (assumes 100% HAP). If your HAP usage is close to the gallons equivalency value, do the actual emissions calculation for more accurate results.

HAP (lbs/gal)	Gallons Equivalency	HAP (lbs/gal)	Gallons Equivalency

6.7	2,980	9.0	2,220
7.0	2,850	9.5	2,100
7.5	2,660	10.0	2,000
8.0	2,500	11.0	1,810

The Yellow Ink Room : Examples of P2 Cost Benefit Methods

Here are four examples of cost/benefit methods to help determine the cost of compliance or a particular P2 technique. These methods, as well as others, can be tailored to your needs and can be applied to other situations.

Method 1 - Cost/Benefit of Silver Recovery Systems

Cost to purchase and install silver recovery equipment: $_____
Annual cost to service and maintain equipment: $_____
Monthly volume of fixer: _____ x 12 = annual volume:_____ gallons
Cost of fixer per gallon: $_____
Value of recovered silver: $_____ (estimate on basis of removal efficiency x annual volume of fix used x average price paid for silver)
Total annual cost: $_____
Annual cost of fix + 1/5 of equipment cost (assuming amortized over 5 yrs.) + annual maintenance cost - annual value of recovered silver: $_____

Method 2 - Photochemical Waste Removal/Recycling *(for any hazardous waste)*

Monthly volume of fixer: _____ x 12 = annual volume: _____ gallons
Cost per gallon of fixer: $_____
Cost per gallon to ship as hazardous waste or recyclable material: $_____
Total annual cost (total material cost + annual disposal cost): $_____

Method 4 - Chemical Substitution Evaluation Method

Current product: _____
    Annual gallons and cost: _____ gallons $_____
    VOC content: _____ lbs/gal
    Annual gallons X VOC content = _____ lbs VOC/yea
    Product vapor pressure in mm (Hg): _____

Substitute product: _____
    Annual gallons and cost: _____ gallons $_____
    VOC content: _____ lbs/gal
    Annual gallons X VOC content = _____ lbs VOC/yea
    Product vapor pressure in mm (Hg): _____

Questions
    How well does the substitute work? _____
    Is it easier to use? _____
    Does it require a change in work practices? _____
    Does it require retraining of employees? _____
    Is there an annual cost savings? Yes ___ No ___ If so, how much? $_____
    Is the vapor pressure below 10 mm Hg (for press cleaning solvents only)? Yes ___ No __
    Is there a reduction in VOCs? Yes ___ No ___ If so, what is it? _____ lbs/yea

Recommendation:
    Should we use the substitute product? Yes ___ No ___

Method 3 - Simple Payback Analysis for Fixer Recirculation System
(can be used for other equipment)

Monthly volume of fixer: _____ x 12 = annual volume: _____ gallons
Cost per gallon of fixer: $_____
Cost per gallon to ship as hazardous waste or recyclable material: $_____
Total annual waste disposal cost (annual volume x cost per gallon): $_____
Volume and cost of water for the last two years
        199__ : $_____   199__ : $_____
Average annual volume and cost of water: _____ gallons $_____
Estimated annual savings in water use with recirculation system: _____ gallons $_____
Estimated annual savings in fixer purchases: _____ gallons $_____
Cost of recirculating system installed: $_____   System annual service and maintenance cost:
$_____
Number of years before savings achieved: _____

*   Cost of recirculation system $ _____*
                                    ──
*   (annual disposal $ _____ + saved fixer $ _____ + + saved water $_____ - maintenance $ _____)*

Go to page 62 for agencies, associations, and services available to the printer, including technical assistance and pollution prevention resources.

The Green Ink Room: DEP Regional Offices and Additional Resources

DEP Infoline   (Printer Information)   (617) 338-2255
                                                                                                                or 1-800-462-0444

                                                                                                                Permit Section
DEP Regional Offices:
          Northeast   205A Lowell Street, Wilmington   (978) 661-7677
          Southeast   20 Riverside Dr., Lakeville   (508) 946-2779
          Central   627 Main St., Worcester   (508) 792-7692
          Western   436 Dwight St., Springfield   (413) 784-1100 x 277

DEP Emergency Response   Boston Area (617) 556-1133
                                                                                              Elsewhere 1-888-304-1133

DEP Hazardous Waste Compliance Assistance Line   (617) 292-5898

US Environmental Protection Agency (EPA)
     New England Environmental Assistance Team   (800) 906-3328
     National Common Sense Initiative   (202) 564-7072

Massachusetts Division of Energy Resources: Energy Advisor Service   (617) 727-4732
   The service will help printers calculate the energy cost implications of their
   actions and develop short and long term plans for energy efficiency. Clients
   pay approximately 12% of the overall cost of EAS services.

Massachusetts Office of Technical Assistance for Toxics Use Reduction (OTA)
   (free confidential onsite visits by appointment)   (617) 727-3260

OSHA Consultation Service (Mass. Division of Labor & Industries)   (617) 969-7177

Massachusetts Water Resources Authority (MWRA) Sewerage Division   (617) 242-7310

CHEMTREC (Chemical Manufacturers Association)   1-800-262-8200

"WasteCap Of Massachusetts"   (617) 236-7715
   A not-for-profit service organization which helps businesses find ways to
   recycle their
   solid waste.

"Working Capital"   (617) 576-8620
   A nonprofit program for micro-businesses and communities providing group-
   based support, loans and technical assistance to self-employed persons with
   limited resources.

Printing Industries of New England (PINE)   (508) 655-8700

Screen Printing & Graphic Imaging Association (SGIA)   (703) 359-1313

Graphic Arts Technical Foundation (GATF)   (412) 741-6860

Mixmaster software program for mixing and recycling ink   1-800-332-9321

Software allows user to input the ink stock, type in a desired color name and quantity
and use up excess ink inventory. Three versions available.

P$_1$Print(Northeast Waste Management Officials' Association)   (617) 367-8558 x 304

Other documents which may help you:

Pollution Prevention Manual for Lithographic Printers, published by Iowa Waste
Reduction Center, University of Northern Iowa (319) 273-2079

A Guide for Photo Processors, A Guide for Lithographic Printers, A Guide for Screen
Printers, published by Washington State Department of Ecology (206) 649-7000

Financing Pollution Prevention Investments: A Guide for Small and Medium-Sized
Business, published by NE USEPA and Northeast Waste Management Officials'
Association (NEWMOA) (617) 367-8558

Interactive CD-ROM on Technical Assistance with Pollution Prevention in the Printing Industry
(available fall 1998), published by Northeast Waste Management Officials'
Association (NEWMOA) 617) 367-8558

Fit to Print, An Environmental Compliance and Pollution Prevention Manual for New England
Lithographers, published by EPA's New England Environmental Assistance
Team (NEEATeam) 1-800-90-NEEAT (1-800-906-3328)

Appendix E:
Printer Sector Inspection Checklist

Date of Visit: _____ DEP Region: _____

DEP Inspector: _____ Tel. _____

Printer Identification: *Use Facility Master File wherever appropriate.*

Facility Name:_____

FacilityAddress:_____

Name of Manager: _____

Hazardous Waste Generator Status: VSQG____ SQG ____ LQG ____

Generator ID Number: _____ SIC: _____

Industrial wastewater is discharged or shipped to MWRA: ____Yes ____No To another POTW: ___Yes ___ No

Check if Printer is not on sewer: _____

Printer certified under MP2: ____Yes ____No

Printer has existing air permits: ____Yes ____No   If Yes, name: _____

Hazardous Waste Requirements   (* = EBPI)
   (SEE DRY CLEANER CHEAT SHEET WITH REG CITATIONS ADDED)

   Does the facility have a generator ID?   [3.1.12]   **Y/N**

   The facility is a: [3.1.3]   VSQG   SQG   LQG
      Circle correct status.

* **Is the facility in compliance with quantity and time limits for HW storage**?
   [3.1.8]   **Y/N**

   Does the facility meet all the emergency notification and response requirements?
   [3.1.11] *This is a roll-up question. The following two requirements have been selected as indicators of the entire list:*

   * - **telephone or other 2-way communication system in areas near where hazardous waste is handled**?   **Y/N**

   * -**posted names and telephone numbers of emergency coordinators, locations of fire alarms and extinguishers, fire department telephone numbers, and evacuation routes**?   **Y/N**

For storage of hazardous waste:

*   **Are containers labeled properly**? [3.1.7]   **Y/N**

 *   **Are containers in good condition and kept closed**? [3.1.7]   **Y/N**

  Are wastes appropriately segregated, hazardous from non-hazardous? [3.1.7] **Y/N**

  Is there a separate, designated hazardous waste storage area, marked
      with line or tape? [3.1.7]   **Y/N**

  Are hazardous waste containers stored on a crack-free surface that
    will contain leaks or spills? [3.1.7]   ***No open floor drains, or berm***   **Y/N**

  Does the storage area have appropriate signage? [3.1.7]   **Y/N**

  Is the storage area inspected weekly for leaks and is there adequate aisle
    space to allow inspections? [3.1.12]   **Y/N**

  Are logs, shipping records, manifests kept for at least three years? [3.1.12] **Y/N**

*   **Does printer have documentation to show where their hazardous waste is**
    shipped? [3.1.12]   **Y/N**

*   Are shop towels or wipers used in ink trays?   Y/N

*   Are used shop towels or wipers kept in closed containers?   Y/N

*   Does printer have a sign prohibiting discharge of process chemicals over   Y/N
   sinks in work areas?

INDUSTRIAL WASTEWATER REQUIREMENTS(* = EBPI)

Workbook Section 3.2.4 -- Wastewater Discharge to MWRA
Does facility have an MWRA sewer permit?   **Y/N**
    group permit _____
    low flow   _____   (**REFER ABSENCE OF REQUIRED PERMIT**
    individual   _____   **TO MWRA**)

Workbook Section 3.2.4 -- Wastewater Discharge to POTW outside
of MWRA service area
       (SEE PHOTOPROCESSOR CHEAT SHEET WITH REG CITATIONS ADDED)

Is facility on sewer?   Y/N

Local permit less than 2.0 ppm?   Y/N
VERBAL RESPONSE; OBSERVE COPY ON-SITE.

In compliance with local permit limit?   **Y/N**
OBSERVE REQUIRED LOG ON-SITE.

* If no local permit, or local permit greater than 2.0 ppm, is the facility in compliance with state standard 2.0 ppm?   **Y/N**
OBSERVE REQUIRED LOG ON-SITE.

* Have Silver Recovery Unit (SRU)? [3.2.5]   Y/N
OBSERVATION.
    Do you use a service contractor?   Y/N
   VERBAL RESPONSE
   Who?
_____

    Type: Cartridge?   Y/N
       How many? _____   In series?   Y/N
       Maker: _____ Model: _____

VERBAL: **What do you do for maintenance**?_____
_____
_____

    Type: Electrolytic?   Y/N
       In series w/ cartridge?   Y/N
       Maker: _____ Model: _____

VERBAL: **What do you do for maintenance**? :
_____
_____
_____

Sampling? [3.2.6 + Appendix instructions]   Y/N
VERBAL + OBSERVE REQUIRED LOG BOOK ON-SITE.

    Do you take your own samples? *VERBAL.*   Y/N

If yes, how?_____

If no, who does it? Vendor? Laboratory? Other? Name:
_____
_____
_____

How often are samples taken?
_____
Last date(s) of sampling (if any):
_____
(cartridge systems--once/ year; cartridge & electrolytic--once/ year;

Annual compliance certification kept on site? [3.2.8]   Y/N
OBSERVATION.

Monitoring log kept up-to-date? [3.2.8]   **Y/N**
OBSERVATION.
Required data includes:
    I. quantity of silver-bearing wastewater processed on avg per day
    ii. system maintenance records
        -- cartridge system:
            • **dates of cartridge installation and replacement**
        -- electrolytic system:
            • **dates of cleaning and service**
    iii. **total volume of wastewater treated, recorded monthly**
    iv. **quantity of silver-bearing wastewater processed annually**

• **Records kept for 3 years**?   **Y/N**
OBSERVATION.

Workbook Section 3.2.1 -- Surface and Groundwater Discharge
    (SEE PHOTOPROCESSOR CHEAT SHEET FOR ADDED CITATIONS)

Discharge to surface water?   Y/N
VERBAL + OBSERVATION IF POSSIBLE.
    * If yes, have NPDES permit?   **Y/N**
    VERBAL + OBSERVE ON-SITE COPY.

Discharge to groundwater? [3.2.1]   Y/N
VERBAL + OBSERVATION IF POSSIBLE.
    * If yes, silver-bearing waste goes to septic system?   **Y/N**
    VERBAL + OBSERVATION IF POSSIBLE
    ---> *NOTE: FACILITY MUST IMMEDIATELY CEASE DISCHARGE*
AND ENFORCEMENT FORBEARANCE IS CANCELLED

    If yes, have groundwater discharge permit?   **Y/N**
    VERBAL + OBSERVE ON-SITE COPY.

Workbook Section 3.2.9 -- Container Management: Industrial Wastewater &
Hazardous Waste   **(SEE PHOTOPROCESSOR CHEAT SHEET FOR ADDED**
          REG CITATIONS)

Facility stores treated silver-bearing wastewater (industrial wastewater)?   Y/N
VERBAL + OBSERVATION.

     If yes, in tanks or in containers? _____
     If in containers: OBSERVATION.
          containers are in good condition?   **Y/N**
          containers are on impervious surface with no cracks?   **Y/N**
          if containers outside, is there spill containment?   **Y/N**
          containers labeled "non-hazardous waste"?   **Y/N**
          containers comply with DOT standards?   **Y/N**

<u>Additional questions that will be difficult to verify:</u>
ASK OPEN-ENDED, LEADING QUESTIONS TO TRY TO GET TRUTHFUL RESPONSES.

For wastewater dischargers to non-MWRA POTWs:
     Are you familiar with your POTW's requirements [3.2.4]?   Y/N

     Have you ever been notified by the POTW of a problem you caused
     or an exceedance of allowable limits?   Y/N

     In compliance with specific prohibitions for wastewater disposal?   **Y/N**
          no pollutants which can cause fire or explosion hazard
          no pollutants which can cause corrosive structural damage
             (pH less than 5.0)
          no pollutants which can cause obstruction of sewer system flow
             (e.g., solids or viscous pollutants)
          no pollutants which can cause inhibition of biological activity
             (e.g., heated waste exceeding $40^{o}C/104^{o}F$)

     What would you do in case of accidental wastewater discharges?_____
_____
_____

<u>Air Quality</u> (* = EBPI)

(all printers)

Are the previous 12 month's purchase/use records indicating size category maintained on site for DEP review? [3.3.1]
                  [310 CMR 7.26(28)(a)1. OR (b)1. OR (c)1.]   **Y/N**

*Are the cleanup solutions used on screen/press in compliance with the applicable standards? [3.3.3: Table 1]   **Y/N**
(See if incidental material exemptions apply)

[310 CMR 7.26(24)(c)1. AND/OR (25)(b)1. AND/OR (26)(b)1.]

Are all pertinent records indicating compliance with the cleanup solutions kept on site? [3.3.10] **[310 CMR 7.26(28)(a)2. OR (b)2. OR (c)2.]** **Y/N**

(Check for the MSDS's for VOC content or documentation for vapor pressure if not on MSDS)

Are cleanup solutions covered when not in use? **Y/N**
[310 CMR 7.26(24)(c)2. AND/OR (25)(b)2. AND/OR (26(b)2.]
==
(midsize and large printers)

***Are the inks/coatings and adhesives in compliance with the applicable standards?** [3.3.3 Table 2**] Y/N**
[310 CMR 7.26(24)(d) AND/OR (25)(a) AND/OR (26)(a)]

Are all pertinent records indicating compliance with inks/coatings, and adhesives kept on site? [3.3.10**] Y/N**
(MSDS's for inks/coatings/adhesives indicating VOC content)
[310 CMR 7.26(28)(b)2. AND/OR (c)2.]

***Are the fountain solutions used on offset web-fed lithographic presses alcohol-free? [**3.3.3: Table 2**] [310 CMR 7.26(24)(a)1.] Y/N/NA**

***Are fountain solutions used on nonheatset offset sheetfed lithographic presses in compliance with the applicable standards**? [3.3.3: Table 2] **Y/N/NA**
*(F.S. using alcohol for sheetfed: 5% alcohol unrefrigerated and 8% refrigerated**)**
[**310 CMR 7.26(24)(a)2.]**

If averaging for compliance with the fountain solution VOC content require-ments for a nonheatset offset sheetfed lithographic press, are weekly records maintained and kept on site for DEP review? [3.3.8.,3.3.10] **Y/N/NA**
[310 CMR 7.26(28)(b) 4. OR (c)5.]

Are all pertinent records indicating compliance with the fountain solution VOC content requirements maintained and kept on site for DEP review? **Y/N/NA**
[3.3.10]*(MSDS's for fountain solution and documentation demonstrating the proportions mixed of concentrate and additives **)**
[310 CMR 7.26(28)(b)3 OR 7.26(28)(c)4.]

For a fountain solution required to be refrigerated for compliance purposes, are there records indicating the temperature of refrigeration? **Y/N/NA**

[310 CMR 7.26(28)(b)5. OR (c)6.]

Are permitted press(es) in compliance with the terms and conditions of the permit?(*Nonheatset and conforming operations may comply with permit until* **Y/N/NA**
May 1, 2001. Heatset or nonconforming presses at a facility with greater
than 10 tons on a rolling 12 month period must comply with the terms and
conditions of the permit) [**310 CMR 7.26(23)(a)1. AND/OR (a)3.**]

If a heatset or nonconforming press is operated at the facility, has the facility determined whether the facility-wide actual emissions are less than/equal to or greater than 10 tons on a rolling 12 month period? **Y/N/NA**
(*permit restrictions such as control efficiencies are allowed in this determination*)
[**310 CMR 7.26(27**)(a)]
If the facility-wide emissions at a facility operating a heatset or nonconforming operation are less than/equal to ten tons on a rolling 12 month period, are those heatset or nonconforming presses operated in accordance with table 3 of the workbook? [3.3.6] **Y/N/NA**
(***The regulatory cite is*** 310 CMR 7.26(27)(a))
==
(large printers)

Has a calculation of actual VOC facility-wide emissions been performed? **Y/N**
[3.3.10](*This is a new requirement since we are dealing with actual emissions,*
and if air pollution control equipment has been installed and approved by the
Department then actuals are based after controls)
[**310 CMR 7.26(28)(c)3.**]
Has a calculation of actual HAP facility-wide emissions been performed? **Y/N**
[3.3.10] [**310 CMR 7.26(28)(c)3.**]
(*This is a new requirement necessary to assure that the facility isn't*
subject to the Printer MACT regulation)

Has the facility submitted their source registration to the Department? **Y/N**
 [5.1](*If the facility has actuals greater than 25 tons then the traditional SR forms*
should be completed annually. Large printers with less than or equal to 25 tons
emissions are required to fill out the Facility Status Form for SR purposes)
[**310 CMR 7.12}**

legend (air section)
* indicates that this requirement is also an Environmental Business Practice Indicator
(EBPI) and should be evaluated irrespective of size category.

Additional Environmental Business Practice Indicators

* Does printer use environmentally preferred products and practices? [4.0]

The following are BMP's and examples of P2:

1. No F-listed cleaning solvents   ___Yes ___No ___NA
2. Chromium-free film developer cleaner   ___Yes ___No ___NA
3. UV ink   ___Yes ___No ___NA
4. Plastisol ink   ___ Yes ___No ___NA
5. Alcohol-free fountain solution   ___Yes ___No ___NA
6. Reuse inks   ___Yes ___No ___NA
7. Re-uses dirty solvent   ___Yes ___No ___NA
8. Recycles aluminum printing plates   ___Yes ___No ___NA
9. Recycles paper wastes   ___Yes ___No ___NA

Appendix F:
EBPIS

Hazardous Waste Requirements

1. *   Is the facility in compliance with quantity and time limits for HW storage?

       Does the facility meet all the emergency notification and response requirements:

2. *   - telephone or other 2-way communication system in areas near where
          hazardous waste is handled?

3.   *   -posted names and telephone numbers of emergency coordinators,
          locations of fire alarms and extinguishers, fire department telephone
          numbers, and evacuation routes?

For storage of hazardous waste:

4.   * Are containers labeled as hazardous waste?

5.   * Are containers in good condition and kept closed?

6.   * Does printer have documentation to show where their hazardous waste is shipped?

7.   * Are shop towels or wipers used in ink trays?

8   * Are used shop towels or wipers kept in closed containers?

9   * Does printer have a sign prohibiting discharge of process chemicals over sinks in
work areas?

INDUSTRIAL WASTEWATER REQUIREMENTS

10 * Printer meeting 2ppm?

11 * Printer Has Silver Recovery Unit

12 * If discharging to surface water, Printer has NPDES permit

13 * Does Printer discharge Industrial Wastewater to the septic system?

AIR QUALITY (all printers)

14 * Are the cleanup solutions used on screen/press in compliance with the applicable standards?

15 * Are the inks/coatings and adhesives in compliance with the applicable standards?

16 * Are the fountain solutions used on offset web-fed lithographic presses alcohol-free?

17 * Are fountain solutions used on nonheatset offset sheetfed lithographic presses in compliance with the applicable standards?

Additional P2 Environmental Business Practice Indicators

18 * Does printer use environmentally preferred products and practices? [4.0]
        The following are BMP's and examples of P2:

1. No F-listed cleaning solvents	___Yes	___No	___NA
2. Chromium-free film developer cleaner	___Yes	___No	___NA
3. UV ink	___Yes	___No	___NA
4. Plastisol ink	___ Yes	___No	___NA
5. Alcohol-free fountain solution	___Yes	___No	___NA
6. Reuse inks	___Yes	___No	___NA
7. Re-uses dirty solvent	___Yes	___No	___NA
8. Recycles aluminum printing plates	___Yes	___No	___NA
9. Recycles paper wastes	___Yes	___No	___NA

Appendix G:
ERP Sector Report Template

ERP INDUSTRY REPORT
Revised Template
Spring 2000

- WHAT IS ERP? (Designed to improve environmental performance……that kind of stuff. Less of the resource savings rhetoric.)

- ISSUES FOR X INDUSTRY (Chemicals of concern / things DEP pays attention to, e.g. the fact that photo processors produce silver)

- DEPARTMENT MESSAGE OR PUNCH LINE YOU WANT TO SAY ABOUT INDUSTRY

- WHAT'S THE ENIVORNMENTAL PERFORMANCE OF INDUSTRY?

    - Broad trends
    - Overall industry scores
    - Benchmarking individual facilities to industry average, e.g. say industry average was an 8.4, could group/list facilities that got say below the average, those that got the average, and those that are higher.
    - Overall EBPI average
    - Specific trends of an individual indicator, e.g. what question did facilities have most trouble with. This is what DEP is doing about it.
    - Note on good work of industry, e.g. % of increase in compliance of a particular indicator, etc.

- THE UNIVERSE:
    - Show how many facilities in the "system" certified, (e.g. 650 out of 700). In the "system" are facilities applicable to ERP (this includes non responders). Also accounted in the "system"are the number of non applicables, e.g. those facilities that closed, etc. and the bad addresses from our mailing. In the "system" shows how well DEP knows the universe

    - Show how our data has evolved and explain why (e.g. where we are today vs. before ERP). For example, the DC's in our SEISS database were less than 10%. After outreach/roll-out of ERP, continual universe maintenance and enforcement, we now know our universe is over 95%.

- REPORT TO PUBLIC ON HOW WELL THE INDUSTRY IS DOING (there may be others, e.g. P2 trends beyond compliance, etc.)

    - How many from the universe certified? – may want to list these facilities
    - How many did not? (% of Non responders % of Non applicables)
    - How accurate are the certs (define accurate: e.g. part of evaluation compares certs to field data)

- What % certified full compliance, e.g. who's doing the right thing? who's doing the wrong thing
- What is the traditional compliance rate (number of inspections/number of violations found)?
- What % filed RTC's (may want to show the decrease in RTC's over the years and what that means, e.g. the kind of violations that are decreasing).
- % of RTC's that are accurate and any other descriptive data
- % of small, mid, large relating potential impact on environment

ENVIRONMENTAL RESULTS INFO –

Examples:

⇒ Dry Cleaners -
How many dry to dry machines versus transfer machines
How many carbon absorbers versus refrigerator condensors
Average Perc Use

⇒ Photo Processors –
How many are recycling silver on-site

⇒ Printers –
How many have no alcohol in fountain solution
How many using low voc inks, coatings, adhesives

- WHAT ENFORCEMENT IS DEP TAKING

- Calls / Warning letters
- NON's issued
- Penalties

TIPS FOR REPORT:

- Use clear, easy to understand charts or graphs – try to show trends (tell a story)
- Don't overwhelm the reader with an overly technical presentation – keep it reader friendly – good mix of narrative (with narrative headings) and charts
- May want to add interesting tidbits about the industry throughout the report
- May want to include anecdotes, e.g. "This year my facility only purchased x pounds of silver compared to x before ERP."
- Feel free to be creative. This is meant to be a model.
- Each sector report should have the same look and feel – maybe icons? (please work together)

Appendix H:
Modified State Regulations

310 CMR 70.00:   ENVIRONMENTAL RESULTS PROGRAM CERTIFICATION

These Regulations were effective as of 5/1/98. They were formatted into HTML October 2001.

Section

70.01: Purpose and Authority

(1)   The purpose of 310 CMR 70.00 is to provide for the protection of public health, safety, welfare and the environment by requiring a facility-wide, performance-based compliance certification.

(2)   310 CMR 70.00 is promulgated pursuant to the authority of M.G.L. c. 21 §§ 26 through 53 (the Massachusetts Clean Waters Act), c.21A §§ 2, 13 and 16, c.21C (the Hazardous Waste Management Act), and c. 111 §§ 142A through 142M (the Massachusetts Clean Air Act).

70.02: Definitions

The definitions found in 310 CMR 70.02 serve only for the purposes of enforcing the compliance certi-fication requirements contained in 310 CMR 70.00 and are not intended to displace the existing defi-nitions of those terms in the underlying standards.

Department means the Massachusetts Department of Environmental Protection.

Environmental Results Program Facility or ERP Facility means one of the following:
   (a)   a dry cleaner subject to 310 CMR 310 CMR 7.26(10)-(16); or
   (b)   a photoprocessor subject to 310 CMR 71.00.
   (c)   a printer as defined in 310 CMR 7.26(22).

Operator means the person responsible for the over-all operation of an ERP facility.

Owner means any person who has legal or equitable ownership, alone or with others, of an ERP facility, including, but not limited to, any agent, executor, administrator, trustee, lessee, or guardian of the estate for the holder of legal title.

Person means any individual, partnership, corporation, syndicate, company, firm, association, authority, department, bureau, trust or group including, but not limited to, a city, town, county, the Commonwealth and its agencies, and the federal government.

Responsible Official is one of the following:

(a)   For a corporation: a president, secretary, treasurer, or a vice-president of the corporation in charge of a principal business function who has been duly authorized pursuant to a corporate vote, or a representative of the corporation who has been duly authorized pursuant to a corporate vote provided the representative is responsible for the overall operation of the facility; or

(b)   For a partnership or sole proprietorship: a general partner with the authority to bind the partnership or the proprietor, respectively; or

(c)   For a municipality, state, federal, or other public agency including any legislatively-created authority, board, commission, district, etc.: either a principal executive officer or ranking elected official who is empowered to enter into contracts on behalf of the municipality or public agency.

Standards means those requirements listed in the certification form referred to in 310 CMR 70.03(4), including but not limited to regulations contained in 310 CMR 7.00, 310 CMR 30.00, 310 CMR 71.00, 310 CMR 72.00, 314 CMR 3.00, 314 CMR 5.00, or 314 CMR 12.00, requirements contained in NESHAP's (40 CFR Part 61 Subparts, and Part 63) or NSPS's (40 CFR Part 60 Subparts) that have been delegated to Massachusetts, and the terms and conditions of any permits issued pursuant to any of those regulations.

70.03:   Compliance Certification Requirements

(1)   **Certification.** Each owner and/or operator of an ERP facility shall submit to the Department no later than September 1st of each year, or as required pursuant to 310 CMR 70.03(3), a certification statement signed by a responsible official which:

(a)   declares applicable standards as listed in the certification form and states whether the ERP facility is in compliance with the applicable standards; and

(b)   identifies the date, type, and reporting date of any violations that were required by applicable law and/or standards as listed in the certification form to be reported to the Department and that occurred within the year prior to the date of the certification statement including, but not limited to, any notifications required pursuant to MGL c.21E, §7 and 310 CMR 40.0300 (releases and threats of release of oil and/or hazardous material), and any reporting of violations required pursuant to 310 CMR 7.02(6) (air pollution control equipment failures), 314 CMR 12.03(8) (emergency bypasses to sewer treatment works), 310 CMR 30.520 (hazardous waste contingency plans) and the terms and conditions of any existing permits issued by the Department.

(2)   **Certification Statement.** Each responsible official providing information required pursuant to 310 CMR 70.03(1) shall make the following certification:

"I, [name of responsible official], attest under the pains and penalties of perjury:

(a)   that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this certification statement;

(b)   that, based on my inquiry of those individuals responsible for obtaining the information, the information contained in this submittal is to the best of my knowledge, true, accurate, and complete;

(c)   that systems to maintain compliance are in place at the facility and will be maintained for the coming year even if processes or operating procedures are changed over the course of the year; and

(d)   that I am fully authorized to make this attestation on behalf of this facility.
I am aware that there are significant penalties, including, but not limited to possible fines and imprisonment, for submitting false, inaccurate, or incomplete information."

(3)   **New ERP Facilities, Recommencement of Facility Operation, and Transfer of Ownership.**
Within sixty days of:
   (a)   the commencement of operation of a new ERP facility;
   (b)   the recommencement of operation of an ERP facility for which no certification was submitted during the year prior to recommencement; or
   (c)   acquiring an ERP facility, each owner and/or operator of the ERP facility shall submit a compliance certification in accordance with 310 CMR 70.03(1) and (2).

(4) **Certification Form.** Each compliance certification required pursuant to 310 CMR 70.03 shall be on a form prescribed by the Department and shall address compliance with standards to which the ERP facility is subject. The certification form may include specialized forms for specific categories of ERP facilities, and any owner/operator required to submit a certification pursuant to 310 CMR 70.03 shall submit all forms applicable to the ERP facility being certified.

70.04: Violations of 310 CMR 70.00

It shall be a violation of 310 CMR 70.00 for any person to:
(1)   fail to submit a certification pursuant to 310 CMR 70.03(1);

(2)   make any false, inaccurate, incomplete, or misleading statements in any certification required pursuant to 310 CMR 70.03;

(3)   make any false, inaccurate, incomplete or misleading statements in any record, report, plan, file, log, or register which that person is required to keep pursuant to the applicable standards;

(4)   hold themselves out as a responsible official in violation of the requirements contained in 310 CMR 70.02;

(5)   fail to comply with the applicable standards; or

(6)   violate any other provision of 310 CMR 70.00.
The Department reserves the right to exercise the full extent of its legal authority, pursuant to M.G.L. c. 21 §§26-53 (Massachusetts Clean Waters Act), c.21A §§2, 13 and 16, c.21C (Hazardous Waste Management Act), and c. 111 §§142A-142M (Massachusetts Clean Air Act), in order to obtain full compliance with all requirements applicable to ERP facilities, including but not limited to, criminal prosecution, fines, civil and administrative penalties, and orders.

REGULATORY AUTHORITY
310 CMR 70.00:   M.G.L. c. 21 §§ 26 through 53; c.21A §§ 2, 13 and 16; c.21C and c. 111 §§ 142A through 142M

Appendix I:
ERP Brochure

THE MASSACHUSETTS ENVIRONMENTAL RESULTS PROGRAM:

$\Rightarrow$ Protecting the Environment and Helping Small Businesses $\Leftarrow$

WHAT IS THE ENVIRONMENTAL RESULTS PROGRAM?

The Environmental Results Program (ERP) is a unique environmental performance initiative used by the Massachusetts Department of Environmental Protection (MADEP). ERP features a multimedia, sector-based regulatory approach that replaces facility-specific state permits with industry-wide environmental performance standards and annual certifications of compliance. ERP applies three innovative tools to enhance and measure environmental performance. These tools supplement MADEP's traditional compliance inspection and compliance assistance efforts:

1. An annual **self-certification** of compliance by companies to increase self evaluation and accountability;
2. **Compliance assistance** from the agency through outreach and innovative workbooks; and
3. A new **performance measurement** methodology to track results, determine priorities and strategically target inspections and compliance assistance efforts.

ERP TOOLS

1. *Self-certification.* ERP requires that a senior company official annually certifies that the facility is and will continue to be in compliance with all applicable state air, water and hazardous waste management performance standards. DEP provides compliance assistance (see below) for facility managers so they can better understand the information that is the basis for their certification. Facilities that are not in compliance must file a "Return to Compliance" plan, which describes the corrective actions that the facility will take and a schedule to achieve full compliance.

2. *Compliance Assistance*. MADEP assists the self-certification process by providing compliance assistance for all ERP facilities. Compliance assistance includes sector-specific workbooks and workshops that clearly explain facilities' environmental obligations as well as sound environmental practices that go "beyond compliance".

3. *Performance Measurement*. MADEP is experimenting with an evaluation methodology that uses random sampling and statistical analysis to measure the performance of ERP sectors and facilities. This methodology validates the performance of the program itself, and is used to target facilities for inspections and compliance assistance. The evaluation tracks environmental business practice indicators (EPBIs), which are industry-specific performance measures that provide snapshots of facilities' environmental performance before and after certification and on a long-term basis.

Currently, ERP applies to three sectors in Massachusetts: dry cleaning, photoprocessing, and printing. MADEP is expanding the program into other sectors, and is working with USEPA to investigate the potential transferability of the ERP approach and its tools to other states.

1

WHY IS THE ENVIRONMENTAL RESULTS PROGRAM UNIQUE?

The Massachusetts' ERP approach is unique in several ways:

- The compliance certification process involves industry proactively in ensuring its environmental compliance. Yearly facility reviews of environmental requirements and annual certifications of compliance create more comprehensive environmental performance than short-term compliance resulting from infrequent inspections.

- Making information about industry's environmental performance and the effectiveness of ERP readily available to the public makes both industry and government more publicly accountable for their performance. Periodic reports provide the public with meaningful information about industrial environmental performance.

- MADEP oversees the program by reviewing certifications and conducting random and targeted compliance inspections, to make sure that the program is working. MADEP can focus its limited resources on companies and sectors that are not performing adequately by targeting inspections and assistance efforts to facilities with specific compliance problems (including failure to file their certifications), and to demonstrated sector-wide problem areas.

> **What is an EBPI?**
>
> *An Environmental Business Practice Indicator (EBPI) is one of the tools developed by MADEP's Environmental Results Program. EBPI's are industry-specific performance measures that provide a snapshot of a facility's environmental performance.*
>
> *The EBPIs include both traditional program compliance measures (e.g. level of compliance with labeling, record keeping) as well as measures that go beyond program compliance (e.g. use of low-VOC cleaning solvents, extent of silver recovery, and perchloroethylene recovery). The number of EBPIs for each sector differs: there are 16 EBPIs for printers, dry cleaners have 16 and photoprocessors have 8 EBPIs (the number of EBPIs varies based on complexity of a sector).*
>
> *MADEP conducts statistical analysis of the EBPIs along with random inspections and review of self-certifications to evaluate the performance of individual facilities, sectors and ERP as a whole. MADEP uses its evaluation to:*
>
> 1. *Determine industry-wide compliance rates and actual environmental performance;*
> 2. *Make more informed and strategic resource allocation decisions for inspections and compliance assistance efforts;*
> 3. *Evaluate ERP's programmatic effectiveness.*

> *"The certification was, for many firms, the first time they had comprehensively reviewed their environmental performance. Firms were quick to make changes so as to submit certifications showing full compliance."*
>
> "Transforming Environmental Protection for the 21st Century," Report by the National Academy of Public Administration
> November 2000

Prepared for the National Environmental Innovations Symposium
December 6-7, 2000

WHAT PROBLEMS IS ERP DESIGNED TO SOLVE?

MADEP undertook ERP to address several concerns, in its view, about the effectiveness of the existing regulatory system for small business and the agency's limited resources. MADEP believes that the traditional regulatory approach:

- Does not efficiently cover all facilities regulated by the state. For example, only 10% of dry cleaners were identified in the state's compliance program prior to ERP implementation (95% of dry cleaners are now included in ERP);

- Does not sufficiently encourage multimedia compliance;

- Needs to encourage more pollution prevention;

- Leads to significant costs for both facilities and MADEP to permit small sources that individually contributed a small fraction to overall pollution.

- Could benefit from more compliance assistance to inform small businesses of their environmental requirements.

- Does not achieve a desired level of environmental performance.

- Does not promote lasting change and improvement in environmental performance at facilities because of: the sporadic nature of inspections; facilities' staff's limited understanding of regulatory requirements and beyond-compliance possibilities; and the frequent turnover of facilities within the regulated sectors.

BENEFITS OF ERP APPROACH AND TOOLS

Environment	Industry
ERP can achieve measurable reductions in environmental impact of covered facilities. ERP prompts industry to increase its focus on complying with environmental laws, and on overall environmental performance. For example, in the dry cleaning sector, 77% of the indicators showed either high performance or a statistically significant increase in performance in a comparison between the baseline and first year ERP results. High performance includes such practices as not discharging to septic systems and installing appropriate pollution control equipment.	ERP can assist facilities in understanding their environmental regulatory requirements and in monitoring their environmental performance. It also eliminates some costs and gives industry more operating flexibility by replacing state permits and reducing state fees. It also engenders high-level management commitment to environmental performance by requiring company owners to certify their compliance, and allows facilities to project a positive environmental image to the public.
Public	**Agency**
ERP holds industry accountable for its environmental performance and increases public awareness of industry's environmental impacts. Stakeholders participate in the development of the ERP compliance workbooks and program design. The public also benefits from ERP through improved environmental results for limited government resources. In addition, ERP documents environmental achievement in a manner that can be more easily understood by the public.	MADEP does benefit from ERP through its improved ability to track environmental performance trends and specific environmental practices of whole industry groups and individual facilities. ERP increases government's cost effectiveness by allowing MADEP to dedicate its limited resources to the areas of greatest concern. ERP results in a multimedia, incentive-based regulatory system that is designed to produce lasting improvements in industry's environmental performance.

HOW CAN I LEARN MORE?

A MADEP/USEPA partnership has been formed to investigate whether the ERP approach and its tools can be transferred to other states and other environmental applications. USEPA Headquarters' (Office of Policy, Economics and Innovation and the Office of Enforcement and Compliance Assurance), USEPA Region I (Boston, MA), and MADEP are exploring opportunities to apply the ERP approach to a variety of environmental problems. This partnership is interested in working with states to help them understand the ERP approach and its tools, facilitate information sharing among states, and pilot-test ERP approaches and its tools, in solving environmental problems.

For more information on the ERP approach and its tools, you can do the following:

- Contact Tara Velazquez, MADEP, (617) 348-4040, to learn more about ERP.
- Contact Greg Ondich, USEPA, (202) 260-4822, or Jeanne Herb, Tellus Institute, (908) 996-0126, about information on the ERP approach and its tools, as well as planned stakeholder meetings in early 2001 to explore applications of this approach in addressing state environmental problems.
- Read a more detailed Executive Summary of the Environmental Results Program to be available on the USEPA website at: http://www.epa.gov/permits/

"The Massachusetts Environmental Results Program creates "a powerful incentive for the owners or managers of small business sectors to take personal responsibility for complying with environmental regulations."

"Transforming Environmental Protection for the 21st Century," Report by the National Academy of Public Administration
November 2000

4

Appendix J:
ERP Executive Summary

THE MASSACHUSETTS ENVIRONMENTAL RESULTS PROGRAM:

⟹ *Protecting the Environment and Helping Small Businesses* ⟸

WHAT IS THE ENVIRONMENTAL RESULTS PROGRAM?

The Massachusetts Environmental Results Program (ERP) is a bold advancement in environmental policy that offers a promising vision for 21st century environmental management.
ERP is an on-going environmental performance initiative that seeks to cost-effectively improve environmental performance through a less burdensome, and more transparent, regulatory system. In this system, facilities are educated about their environmental impact and obligations,

> *"The Massachusetts Environmental Results Program creates "a powerful incentive for the owners or managers of small business sectors to take personal responsibility for complying with environmental regulations."*
>
> "Transforming Environmental Protection for the 21st Century,"
> Report by the National Academy of Public Administration
> November 2000

are required to certify compliance, and are tracked to evaluate environmental performance. In addition, the Massachusetts Department of Environmental Protection (MADEP) applies a statistical approach to track environmental performance of individual facilities and whole industry groups and uses the results to target compliance assistance and inspections.

The ERP approach applies three innovative tools to enhance and measure environmental performance. These tools supplement MADEP's traditional compliance inspection program:

1. An annual **self-certification** of compliance by companies to increase self evaluation and accountability;
2. **Compliance assistance** from the agency through outreach and innovative workbooks; and
3. A new **performance measurement** approach to track results, determine priorities and strategically target compliance inspections and assistance efforts.

The ERP approach is complemented by the Department's performance of traditional, random and targeted compliance inspections. ERP is not a voluntary or leadership program; for those sectors covered by ERP, participation (including self-certification of compliance) is mandatory.

ERP Tools: A Closer Look

1. SELF-CERTIFICATION FORMS

- *Technique:* ERP shifts the burden of compliance assurance from government to the facility while still maintaining government's oversight role. It raises high-ranking facility managers' and operators' awareness and prioritization of environmental performance. By requiring that facilities certify their compliance status and that they will maintain systems to remain in compliance, and by replacing state permits with performance standards, ERP creates an Environmental Management System approach to ensure ongoing good environmental performance at facilities. The self-certification form provides an easy way for facility management and staff to understand environmental obligations and gauge environmental performance.

- *Tools:* ERP requires that a senior company official annually "self-certify" the facility's compliance status and that the facility have systems in place to maintain compliance with all applicable state air, water, and hazardous waste management performance standards. This self-certification is backed up by training, workbook review, and a checklist of regulatory requirements. The self-certification replaces case-by-case state permits where applicable. Facilities that are not in compliance must complete a Return to Compliance (RTC) plan, which commits them to specific corrective actions and a schedule to achieve full compliance.

2. COMPLIANCE ASSISTANCE WORKBOOKS

- *Technique:* MADEP aids the self-certification process by providing compliance assistance for all ERP facilities. This effort incorporates both regulatory requirements and "beyond compliance" practices. It encourages facilities to improve overall environmental performance through pollution prevention and other management approaches. By making environmental performance and regulatory requirements meaningful to facilites, the program strives to motivate facility managers to fully understand their environmental impact and obligations.

- *Tools:* Compliance assistance includes "plain language" sector-specific workbooks and workshops that clearly explain facilities' environmental obligations. The compliance assistance is linked to the self-certification by requiring the facility operator to certify to compliance with all the requirements found in the workbook. The sector workbooks and workshops also include both regulatory compliance requirements and sound environmental practices that are "beyond compliance." Similarly, the sector workbooks and workshops include information about the environmental, worker and public health impact of a facility's operations.

3. ENVIRONMENTAL BUSINESS PRACTICE INDICATORS (EBPIs)

- *Technique:* MADEP's performance measurement fosters more accountability by both industry and government. It allows MADEP to effectively focus available resources on sectors, facilities and specific practices that need the greatest level of attention.

- *Tools:* MADEP is experimenting with an evaluation methodology that uses statistical analysis and random sampling techniques to measure the performance of ERP sectors and facilities as well as to validate the performance of the program itself. MADEP also uses its evaluation to target facilities for inspections and compliance assistance. For the purpose of evaluation, MADEP has tracked environmental business practice indicators (EBPIs), industry-specific performance measures that provide a snapshot of facilities' environmental performance before and after certification as well as performance over time.

During the initial rollout phase of ERP, MADEP focused on sectors that were primarily subject to state, rather than federal, requirements. The decision was based on MADEP's desire to focus ERP on small business sectors during its initial development and application because of the lower perceived risks of individual small businesses and the high potential environmental gains from improved performance by whole business sectors.

ERP currently applies to more than 2,000 Massachusetts facilities in three sectors: dry cleaning, photoprocessing, and printing. MADEP is in the process of expanding ERP to two additional, cross-sector categories: (1) facilities discharging industrial wastewater (IWW) to sewers; and (2) facilities installing new boilers. The state is also expanding the program into other sectors and USEPA and MADEP have formed a partnership to investigate the transferability of the ERP approach and its tools to other states.

What is an EBPI?

The use of Environmental Business Practice Indicators (EBPIs) is one of the tools developed by MADEP as part of the Environmental Results Program. EBPIs are industry-specific performance measures designed by MADEP to give a snapshot of a facility's environmental performance.

The EBPIs include both traditional program compliance measures (e.g. level of compliance with labeling or record keeping requirements) and measures that go beyond program compliance (e.g. use of low-VOC cleaning solvents, extent of silver recovery, and perchloroethylene recovery). The number of EBPIs for each sector differs: there are 16 EBPIs for printers, dry cleaners have 16 and photoprocessors have eight.

MADEP conducts statistical analyses based on data from random inspections and review of self-certification, to evaluate the performance of individual facilities, sectors and ERP as a whole. MADEP uses its evaluation to:

1. Determine industry-wide compliance rates and actual environmental performance;
2. Make more informed and strategic resource allocation decisions for inspections and compliance assistance efforts;
3. Evaluate ERP's programmatic effectiveness.

WHAT PROBLEMS IS MA ERP DESIGNED TO SOLVE?

MADEP undertook ERP to address several concerns, in its view, about the effectiveness of the existing regulatory system for small business and the agency's limited resources. MADEP believes that the traditional regulatory approach:

- Does not efficiently cover all facilities regulated by the state. For example, only 10% of dry cleaners were identified in the state's compliance program prior to ERP implementation (95% of dry cleaners are now identified under ERP);

- Favors single medium, rather than multimedia, compliance;

- Needs to encourage more pollution prevention;

- Leads to significant costs for both facilities and MA DEP to permit small sources that individually contribute a small fraction to overall pollution.

- Could benefit from more compliance assistance to inform small businesses of their environmental obligations.

- Does not achieve a desired level environmental performance.

- Does not promote lasting change and improvement in environmental performance at facilities due to the sporadic nature of inspections; facilities' staff's limited understanding of regulatory requirements and "beyond-compliance" possibilities; and the frequent turnover of facilities within the regulated sectors.

WHAT RESULTS HAS MASSACHUSETTS SEEN TO DATE?

⇒ **Environmental Outcomes**

- ERP has led facilities to identify and correct regulatory violations. 86% of printers involved in an ERP pilot reported that the program influenced them to make environmentally beneficial changes in their facility operations. Anecdotal evidence suggests many facilities corrected violations prior to the certification deadline.

- ERP also has led facilities to adopt pollution prevention (P2) measures and go "beyond compliance." ERP's workbooks and EBPIs include pollution prevention practices in addition to performance measures.

> *"By expanding the number of small businesses inside the state's regulatory system, DEP not only increases the scope of compliance with regulatory standards, but also levels the economic playing field among hundreds of competitors and thus reduces the incentive to ignore environmental safeguards."*
>
> "Transforming Environmental Protection for the 21st Century," Report by the National Academy of Public Administration
> *November 2000*

- Both quantitative and qualitative early results reveal higher environmental performance. Both dry cleaners and photoprocessors had a statistically significant increase in environmental performance as a result of ERP. In the first year of ERP, 10% of facilities self-disclosed violations and committed to return to compliance. Printers were found to have reduced VOC emissions, ceased disposing of hazardous waste with their solid waste, and eliminated practices such as washing ink-contaminated press rollers in sinks. Dry cleaners were found to have made

significant compliance and pollution prevention changes to their operations as a result of ERP. Changes included: instituting leak detection and repair programs; changing filters more regularly; vaccuuming coils on a schedule; scheduling full loads whenever possible; and eliminating illegal wastewater discharges. Finally, photoprocessors found that ERP prompted reductions in silver discharges to POTWs through installation of silver recovery units and frequent planned cartridge changes.
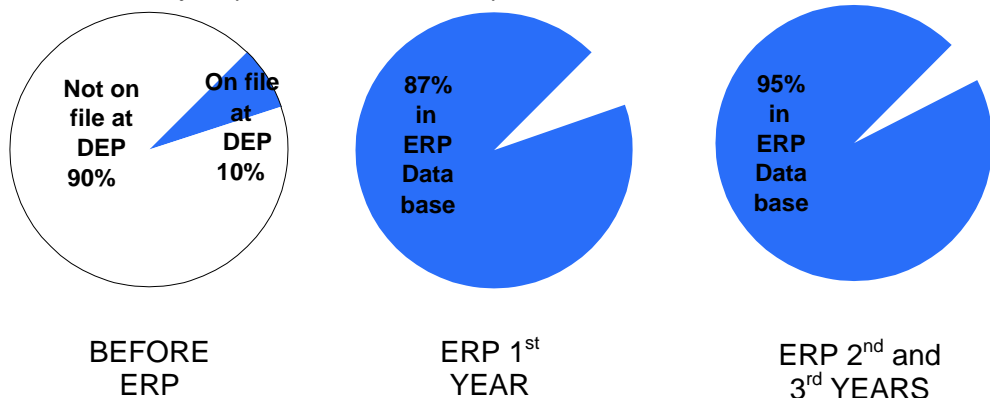
⇒ **Compliance**

- Because ERP requires certification of compliance by high-level company officials, it has increased senior management attention to environmental management.

> *"It meant my boss (the president) gave me the 'keep me out of jail speech' every time that he signed it."*
>
> "Transforming Environmental Protection for the 21st Century,"
> Report by the National Academy of Public Administration
> November 2000

- One of the most marked effects of ERP was bringing many facilities into MADEP's regulatory system that had not previously been unaccounted-for. For example, before implementation of ERP, only 10% of dry cleaners were in the state regulatory database; (i.e. "in the system") two years after ERP began, that number had jumped to 95%. The National Academy of Public Administration reported that prior to ERP, only approxmiately 380 firms were accounted for by DEPs's regulatory system in all three sectors and that post- ERP, that number had increased to 2,200 firms.e

Figure: Increase of Dry Cleaners "in the system"

| BEFORE ERP | ERP 1st YEAR | ERP 2nd and 3rd YEARS |

- The initial response to ERP by facilities was very high, quickly bringing self-certification into effect for the majority of affected facilities. An important ERP technique for bringing facilities into compliance is the requirement of Return-to-Compliance (RTC) Plans for those facilities reporting non-

> *"The certification was, for many firms, the first time they had comprehensively reviewed their environmental performance. Firms were quick to make changes so as to submit certifications showing full compliance."*
>
> "Transforming Environmental protection for the 21st Century,"
> Report by the National Academy of Public Administration
> November 2000

compliance. Eighty percent of dry cleaners and photoprocessors accurately completed self-certifications in 1997, the first year of the program. In addition, 10% of the ERP facilities filed RTC Plans and, of those, 35% committed to take steps to decrease environmental impacts through actions such as installing pollution controls and implementing pollution prevention practices.

⇒ Administrative Costs

- ERP allowed MADEP to reduce state fees for regulated facilities. ERP led to a net saving for most companies that had obtained required state permits in the past. For example, a mid-size printer would have paid as much as $2,000 in permit fees to cover the cost of MADEP permit review under the traditional system but now pays one annual fee of $200 for ERP since no MADEP permit review is required. Another potential cost saving for printers is the elimination of the required modification permits, allowing printers to simply report facility changes in their annual ERP self-certification. The elimination of the preconstruction requirement both decreases the paperwork for printers and increases their flexibility to make changes without having to plan far in advance and wait for a permit. Despite the actual decrease in regulatory costs to facilities, those facilities that had never notified MADEP to come into the regulatory system or paid required fees prior to ERP perceived the ERP fee as a cost increase.

- Although no new resources were allocated to develop the program, many staff within MADEP perceived that ERP had high startup costs because initially resources were drawn from other program areas to allow for ERP program development. Staff drawn from existing programs were assigned to teams to develop the workbooks and the EBPIs, prepare the program regulations, interact with stakeholders, and develop the universe of facilities for three business sectors. In total, 14 Full-time Equivalents (FTEs), over a four year period, comprised of MADEP management and staff worked on ERP. Although these officials worked on ERP over an extended period of time, nonetheless, they represent about 1% of MADEP's total staff. A significant number of the 14 FTEs can be attributed to the start-up costs of developing new approaches, systems and procedures. The 14 FTEs also must be considered in the context of the level of resources that would have been needed to conduct a comparable traditional regulatory initiative for these sectors.

- Maintenance costs for each ERP sector after start up are now less than 1 FTE per sector. In hindsight, MADEP views the 14 FTEs as a sound strategic investment in relation to ERP's environmental benefits to date, the tools it has developed, and the usefulness of ERP to future additional business sectors. Furthermore, as part of its current expansion of ERP, MADEP is finding that up-front program development costs are considerably lower because the agency has already "learned the ropes" of creating an ERP. Similarly, MADEP expects that other states would experience lower up-front program development costs, particularly if those states focused on the same sectors already addressed by MADEP, since MADEP has already created program materials.

WHO BENEFITS FROM ERP?

Environment

- Overall industry environmental performance improved as a result of ERP. 77% of the EBPIs showed either high performance or a statistically significant increase in environmental performance in a comparison between the baseline and the first ERP certification. High performance includes such practices as not discharging toxic pollutants to septic systems and installing appropriate pollution control equipment. Only 10% of the indicators showed a statistically significant decrease in environmental performance: e.g. proper labeling of containers.
- Facilities' increased understanding and certification of compliance with requirements, as well as the inclusion of information on pollution prevention in compliance workbooks, also led to environmental benefits. Many facilities report that ERP has influenced them to make environmentally beneficial process changes and has helped to ensure that the facilities are environmentally responsive. Facilities also completed Return to Compliance plans that resulted in decreased environmental impacts and improved compliance systems.
- The changes in business management attitudes reported by ERP facility environmental managers are expected to have a positive and continuing effect on future environmental performance.
- ERP benefits the environment by increasing the number of facilities in the system who know their environmental obligations. As described above, the universe of firms in the system has increased dramatically under ERP.

Industry

- ERP assists facilities in understanding their environmental regulatory requirements and monitoring their environmental performance. This approach is similar to that used to determine environmental compliance in many industrial Environmental Management Systems (EMS). As a facility representative interviewed for the NAPA report said, "one sleeps better knowing [one is] in compliance."
- ERP also has led to long term cost savings for most facilities through reduced government fees and greater flexibility in deciding how to meet regulatory requirements. Also, by not having to apply for or modify state permits prior to making operational changes, businesses gain additional cost savings from ERP because delays associated with permit reviews are eliminated.
- Pollution prevention efforts have the potential of saving industrial facilities additional money through use of less raw materials, lower liability costs, and reduced waste handling costs.
- Whole industry groups and individual facilities can demonstrate to the public that they are good environmental neighbors.

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Public

- The public benefits from ERP through enhanced business accountability and an increase in facilities accounted for in the regulatory system. This has resulted in an increase in environmental benefits, public health benefits, and a greater efficiency in use of government resources. While the universe of facilities in the regulatory system has drastically increased (see "Environment," above), MADEP's regulatory maintenance costs are not expected to change significantly.
- Public participation and information also have played a significant role in ERP. Diverse stakeholders were offered the opportunity to participate in development of the ERP. Information on the self-certification status of all affected facilities, as well as on the results of MADEP's analysis of overall industry environmental performance, is publicly available through MADEP.

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Agency

- MADEP benefits from ERP through its improved ability to track environmental performance of facilities, sectors, and specific practices, which allows for cost effective resource allocation. For example, the agency can now target inspection and assistance resources at facilities that have not self-certified compliance or that indicate on their certifications that they have significant compliance problems (i.e. the 10% that filed Return to Compliance Plans) or are affected by specific industry-wide problem areas. Also, the increase in facilities in the system provides for more effective coverage of the involved sectors.
- While initial program development costs for ERP were significant, MADEP expects to see cost savings in the long term as maintenance costs to oversee whole business sectors are compared to full implementation costs for the traditional regulatory approach.

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HOW DID MASSACHUSETTS CREATE ERP?

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The Environmental Results Program had its origin in a 1995 conversation between two stakeholders that centered on the concept of environmental performance standards as a substitute for permitting. The two stakeholders - one from an environmental advocacy organization and one from an industry organization - agreed that such an approach could provide more effective enforcement of standards while granting more flexibility to industry. MADEP representatives developed the idea into what would become known as the Environmental Results Program or ERP.

Stakeholder Involvement and Management Support

An important tool in the development of ERP was a multi-stakeholder advisory group. This group was comprised of representatives from USEPA, other governmental bodies, environmental advocacy groups, business and industry, consulting firms, and the legal community. This advisory group was quite active in the first years of ERP, advising MADEP on the design of the certification statement, workbooks, and the demonstration project. ERP also benefited from senior MADEP management support. The Massachusetts Governor and MADEP Commissioner both strongly supported ERP and the regulatory "reinvention" concepts it represents. High-level support within MADEP helped implement the innovative program as did the commitment of several key staff members. In addition, MADEP's multimedia structure and centralized budgetary system helped ERP managers access resources from across the agency.

Pilot and Program Roll-Out

The first stage of ERP implementation was a 1996 Demonstration Project involving 18 small and medium-size businesses. The firms, which volunteered to participate, worked with MADEP to develop process-specific performance standards. The Demonstration Project also tested other ERP techniques, such as annual compliance certification, compliance assistance, and performance standards.

Based on lessons learned in the Demonstration Project, MADEP launched ERP in 1997 in two sectors: dry cleaners and photo processors. Printers were added in 1998. MADEP chose these sectors based on several factors, including: the lower perceived risk in experimenting with small businesses; the high potential gains from including a large number of regulated entities; and the advantages of working with cooperative trade associations.

MADEP and USEPA entered into an agreement under Project XL. The Final Project Agreement (FPA) is an umbrella agreement that lays out a process and criteria for how MADEP can request and USEPA can provide federal regulatory flexibility.

Challenges

Development of ERP did not proceed without its share of challenges. These challenges included:

- Facing concerns by environmental groups about ERP's relationship to the Governor's overall "less government" theme, and about demands on their limited resources;
- Managing internal skepticism from MADEP staff and managers about the degree of environmental improvement that would result from ERP;

- Addressing expectations that an innovative regulatory approach should be held to a higher standard of success than existing, traditional regulatory programs;
- Building new MADEP staff skills to implement a performance based system;
- Overcoming institutional resistance to change and stakeholder fears about a new government approach to environmental regulation; and
- Gaining acceptance of a new measurement system for tracking both industry and the agency's progress.

ERP Next Steps

As mentioned previously, MADEP is now in the process of expanding ERP to two additional, cross-sector groups: (1) facilities discharging industrial wastewater (IWW) to sewers, which comprise an IWW "sector" and (2) facilities installing new boilers, which comprise a combustion "sector." Certifications for boilers are planned for Spring 2001, while IWW certifications are currently planned for Fall 2001. MADEP also is preparing industry performance reports, planning to pick its next ERP business sectors, and continuing development of the performance measurement and resource allocation components of the program.

> *"States should adopt and adapt the Massachusetts Environmental Results Program to their own small-business problems. Wherever possible, EPA and the states should standardize the compliance assistance/facility level requirements to reduce the cost of program design, and to speed the rapid introduction of the self-certification approach."*
>
> "Transforming Environmental protection for the 21st Century," Report by the National Academy of Public Administration November 2000

HOW CAN WE START A SIMILAR PROGRAM IN MY STATE?

Developing an ERP

The MADEP experience points to five steps that a state agency should consider in adopting an approach similar to ERP and/or its tools. These five steps will be outlined in greater detail in a comprehensive ERP User's Guide that is currently being developed. In short, the five steps to consider are:

1. **Investigate** – States should consider the following questions in determining if the ERP approach or its tools may be useful in achieving their program and/or environmental objectives:

   - Could the ERP approach and its tools address unresolved environmental problems, such as low compliance rates, burdensome permitting processes, etc.)?

   - What economic sectors would be most appropriate for an ERP approach and its tools (see box)?

   - Does the state have an organizational structure or culture that supports innovative approaches to environmental problem solving?

2. **Plan** – Considerable planning goes into developing an ERP. Technical workbooks and performance standards need to be developed. State regulations may need to be promulgated to allow certifications to replace permits and to establish performance standards. An information management system needs to be created to efficiently manage data created by the program. Resources need to be secured and management operations need to be put in place. Mechanisms need to be established to maintain early and consistent communication with stakeholders. The materials already developed by MADEP, including self-certification language, regulations, EBPIs and workbooks, might prove very useful to other states, particularly if they are developing efforts in the same three sectors that are included in the MADEP ERP program.

> **An Industrial Sector Might Be Ideal for a Start-up ERP-Type Program if it…**
>
> - Has a dominance of state rather than federal requirements;
> - Has an active trade association;
> - Has a reasonably large number of smaller operating facilities;
> - Maintains a relatively cooperative relationship with the state regulatory agency;
> - Has a significant environmental impact as a whole;
> - Is historically un- or under-regulated;
> - Has demonstrated an interest in regulatory innovation;
> - Has a good environmental return on resource investment;
> - May be facing new or changing sector-wide environmental regulatory requirements.

3. **Pilot** – MADEP found significant benefits from first piloting ERP with 18 facilities and then "rolling it out" to whole industry sectors. In particular, piloting ensures that internal mechanisms are in place to guarantee program success. Other states can benefit from the experiences of the MADEP pilot but may also benefit from undertaking their own pilots.

4. **Implement** – Managing implementation of a program that affects thousands of facilities is an important task for an agency. Doing so for a program that is significantly different from traditional regulatory approaches is even more challenging. Stakeholders need to be continually informed as to the program's results. Senior agency management also needs to be informed of early findings. Automation and statistical analyses are key elements in the ERP approach so resources need to be dedicated for the full term of program implementation.

5. **Evaluate and Modify** – New and innovative programs need to have mid-course evaluations so that appropriate corrections and refinements can be made. MADEP uses its performance measurement system to track program progress and to determine where to conduct strategically targeted inspections, and where to apply assistance and enforcement resources. Other states developing an ERP will also want to consider how to best use "checks and balances" and performance measurement tools to evaluate the progress of facilities, sectors and the program itself.

Partnership Opportunities
A MADEP/USEPA partnership has been formed to investigate the transferability of the ERP approach and its tools to other states and environmental applications. This partnership is interested in working with states to (1) help them understand the ERP approach and its tools, (2)

facilitate information sharing among states, and (3) assist states in testing ERP approaches in solving environmental problems.

For more information on the ERP approach and its tools:

- Contact Tara Velazquez, MADEP, (617) 348-4040, or visit the MA DEP Websie at http://www.state.ma.us/dep/erp
- Contact Greg Ondich, USEPA , (202) 260-4822, or Jeanne Herb, Tellus Institute, (908) 996-0126, for information on the ERP approach and its tools, as well as planned stakeholder meetings in early 2001 to explore applications of this approach in addressing state environmental problems.
- Review the draft User's Guide to the Environmental Results Program that is expected to be available on the USEPA website at: *http://www.epa.gov/permits/* in early 2001.
- Begin to take preliminary steps as outlined in the box below:

Next Steps for Exploring the Application of an Environmental Results Program Approach in Your State

If you represent state government:
- Identify problems and benefits that your agency may address and gain, respectively, from implementing an ERP;
- Determine if other programs are already underway in your agency upon which an ERP could be "piggybacked;"
- Identify sectors that might be ideal for an ERP;
- Consider how ERP might fit into environmental and internal "reinvention" or "innovation" priorities of your agency;
- Consider whether individual tools of ERP or ERP as a whole may be most effective in your state; and
- Provide senior agency management with this executive summary and the ERP Brochure.

If you represent an industrial sector:
- Identify what "problems" ERP might solve for your sector and what benefits it might bring to your sector.
- Determine a general level of interest by facilities in your sector. Initiate a discussion with facilities and relevant trade associations about ERP;
- Consider how the ERP approach might complement other initiatives underway in your sector;
- Consider whether individual tools of ERP or ERP as a whole might be most effective in your sector; and
- Meet with upper management in the state environmental agency to discuss ERP.

If you are a private citizen or environmental advocacy group:
- Identify your areas of concern;
- Determine the level of interest within your community or organization to pursue environmental improvements through an Environmental Results Program;
- Meet with industry representatives to gauge their interest and concerns about ERP; and
- Contact senior managers at state and federal environmental agencies to promote adoption of an ERP.